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PRINCIPAL INVESTIGATOR: Dale S. Vincent, M.D.

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Honolulu, HI 96813

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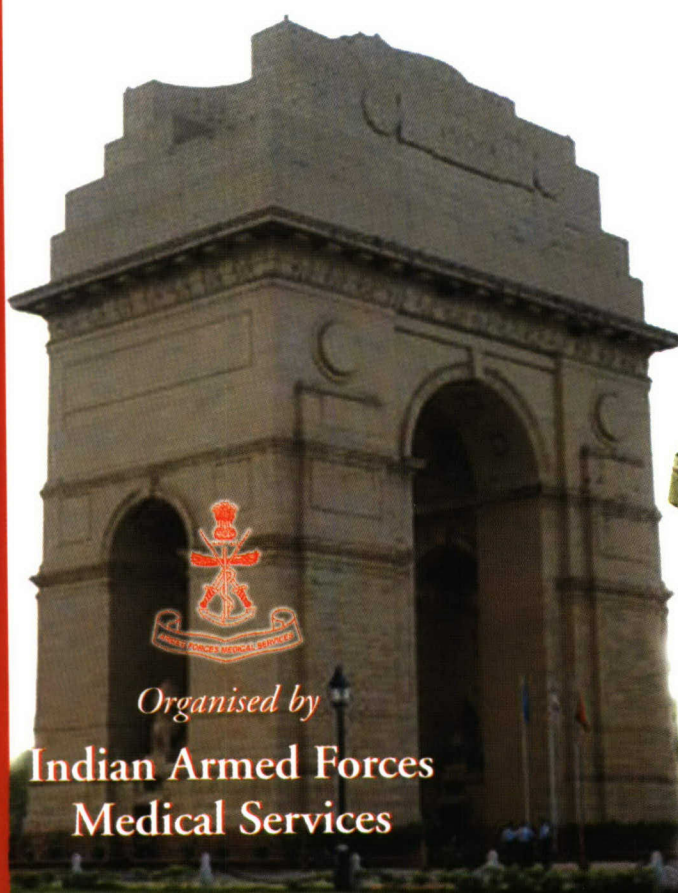
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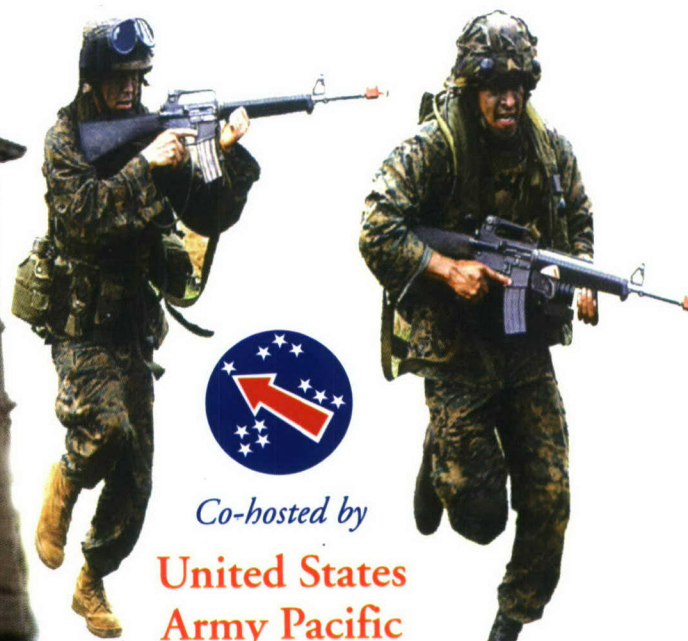
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"Professionalism in Military Medicine - Striving for Excellence"



Organised by
**Indian Armed Forces
Medical Services**



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**United States
Army Pacific**

XVI Asia Pacific Military Medicine Conference

26-31 March, New Delhi, India

Scientific Programme

Monday, 27 March 2006

0900-1100 Opening Ceremony (Durbar Hall)

Summer Uniform

Scientific Exhibition

Keynote Addresses

Group Photo

1100-1130 Morning Tea Break

(Shahjehan Hall)

1130- 1315 Session 2: Plenary I (Durbar Hall)

Combat Medicine

Moderators: Lieutenant General LP Sadhotra, AVSM and Colonel Joseph Pina

Colonel David Schall , United States - Hawaii

EVOLUTION OF MASS CASUALTY EVACUATION WITHIN THE U.S. AIR
FORCE

Brigadier Pradeep Bhargava, VSM, India

MANAGEMENT OF WAR WOUNDS

Major General Ronnawit Uppathamnarakorn Thailand

THE ROYAL THAI ARMY MEDICAL DEPARTMENT AGAINST THE
SOUTHERN UNREST

Lieutenant Colonel Thomas Crabtree, United States - Hawaii

EXTREMITY INJURIES AND LIMB SALVAGE TECHNIQUES IN
OPERATION IRAQI FREEDOM

1315 -1400 **Lunch**

1400-1530 **Concurrent Sessions**

1400 **Breakout Session 3A: Eye and ENT Diseases
(Durbar Hall)**

Moderators: Brigadier Suresh Chandra, VSM, and Major Joseph Snizek

Brigadier D P Vats, SM, VSM, India

OCULAR INJURIES IN COUNTER - INSURGENCY OPERATIONS

Ms. Adeline Yang, Singapore

**EFFECTS OF CORNEAL REFRACTIVE SURGERY (CRS) ON MILITARY
OPERATIONS**

Colonel P Sukthankar, India

TRACHEAL INJURIES

Lieutenant Colonel Rakesh Datta, India

**IMPACT OF NASAL SYMPTOMS ON THE QUALITY OF LIFE OF FRESH
INDUCTED SOLDIERS IN HIGH ALTITUDE**

1400 **Breakout Session 3B: Malaria
(Mumtaz Hall)**

Moderators: Brigadier SK Handa and Lieutenant Colonel Michael Edstein

Colonel (Ret) G. Dennis Shanks, United States - Australia

**STRESS-RELATED MALARIA RECRUDESCENCE AND ITS POSSIBLE
ROLE IN THE GENESIS OF MALARIA EPIDEMICS**

Air Commodore M K Mishra, India

MALARIA: THE SLAYER GIANT OF NORTH-EAST INDIA

Lieutenant Colonel Bui Tri Cuong, Vietnam

**THE EFFICACY AND TOLERABILITY OF ARTESUNATE PLUS HIGH
DOSE PRIMAQUINE FOR THE TREATMENT OF PLASMODIUM VIVAX
MALARIA IN VIETNAM**

Colonel Alberto Gabriel, Philippines

THE TREND OF MALARIA INFECTION IN THE ARMED FORCES OF THE PHILIPPINES

1400

**Breakout Session 3C: Operational Medicine I
(Jehangir Hall)**

Moderators: Brigadier D Ganguly, VSM and Captain Rudolph Pavlesich

Dr. Rodney Pope, Australia

LESSONS LEARNED IN AUSTRALIA FOR INJURY PREVENTION IN THE MILITARY

Colonel Piyapan Cheeranont, Thailand

CASUALTIES FROM INSURGENCIES IN THE THREE MOST SOUTHERN PROVINCES OF THAILAND

Colonel Susan Fraser, United States - Hawaii

INFECTIOUS DISEASES TELECONSULTATIONS FOR OEF/OIF

Colonel K M Rai, SM, India

MANAGEMENT OF VASCULAR INJURIES IN A FORWARD HOSPITAL

1400

**Breakout Session 3D: Nursing in the Military I
(Arcade Hall)**

Moderators: Major General Shashibala and Lieutenant Colonel Debra Mark

Colonel Beverley Wright, Australia

NURSING - THE INVISIBLE PROFESSION

Major Nancy Steele, United States - Hawaii

MILITARY PLANNING AND EVALUATION OF HUMANITARIAN MISSIONS

Colonel Shobha Sood, India

ROLE OF NURSE IN MILITARY MEDICINE

Colonel Arthur Wallace, United States - Hawaii

PREPARING NEW MILITARY NURSES FOR DEPLOYMENTS TO MILITARY OPERATIONS IN IRAQ AND AFGHANISTAN

1530-1545 Afternoon Tea Break (Mumtaz Hall)

1545-1715 Concurrent Sessions

1545 Breakout Session 4A: Dental Sciences
(Durbar Hall)

Moderators: Lieutenant General Paramjeet Singh, AVSM, VSM* and Commander Mark Lyles

Captain Charles Craft, United States - Cambodia

U.S. MILITARY DENTAL ASSISTANCE PROGRAM IN MADAGASCAR

Colonel G K Thapliyal, India

MANAGEMENT OF CRANIOFACIAL INJURIES: A TEAM APPROACH

Major Joseph Sniezek, United States - Hawaii

RECONSTRUCTION OF ORAL/MANDIBULAR DEFECTS

Colonel S Karkun, India

INJURY PATTERNS AND MANAGEMENT OF MAXILLOFACIAL
GUNSHOT WOUNDS: A 10-YEAR EXPERIENCE

1545 Breakout Session 4B: Dengue and Vector-Borne Diseases
(Mumtaz Hall)

Moderators: Brigadier Zile Singh and Colonel Raj Gupta

Dr. Brij Tyagi, India

DENGUE FEVER/DENGUE HAEMORRHAGIC FEVER IN INDIA
THROUGH AEDES ALBOPICTUS (SKUSE) - ASIAN TIGER MOSQUITO,
WITH SPECIAL REFERENCE TO KERALA STATE

Captain Richard Jarman, United States - Thailand

CHARACTERIZATION OF DENGUE CASES PRESENTING TO A TERTIARY
MEDICAL CENTER IN METRO MANILA, PHILIPPINES

Senior Colonel Nguyen Xuan Thanh, Vietnam

DENGUE SURVEILLANCE IN VIETNAM: VIETNAM PEOPLE'S ARMY -
AUSTRALIAN DEFENCE FORCE DENGUE PROJECT

Colonel Raj Gupta, United States

POTENTIAL NEW INSECT/ARTHROPOD REPELLENTS FOR PERSONAL
PROTECTION AGAINST INFECTIOUS DISEASE VECTORS

1545

**Breakout Session 4C: Operational Medicine II
(Jehangir Hall)**

Moderators: Brigadier BK Singh, SM, VSM and Lieutenant Colonel Mark Burnett

Major Benjamin Kam, Jr., United States - Japan

ORTHOPAEDIC MORBIDITY OF THE CURRENT WAR ON TERRORISM:
U.S. PERSPECTIVE

Colonel Pramote Emwattana, Thailand

SATISFACTION OF MOBILE MILITARY MEDICAL SERVICE IN THE
SOUTHERN PART OF THAILAND

Captain Rudolph Pavlesich, United States - Hawaii

THE DEPLOYMENT EXPERIENCE: UNDER CONSTRUCTION

Dr. William Burrows, United States

RECENT DEVELOPMENTS IN FIELD POTABLE WATER SUPPLY

1545

**Breakout Session 4D: Bioterrorism
(Arcade Hall)**

Moderators: Er K Sekhar and Colonel Gary Vroegindewey

Dr. Marti Jett, United States

DETECTING BIOTHRREATS THROUGH IMMUNE SYSTEM GENE
EXPRESSION RESPONSES POST EXPOSURE: APPLICATION OF
MATHEMATICAL MODELS TO IDENTIFY UNIQUE SIGNATURE
PATTERNS

Brigadier A Nagendra, India

BIO TERRORISM

Dr. Prakash Temkar, United States - Japan

MILITARY HEALTHCARE AND PUBLIC WATER SYSTEM
VULNERABILITIES

FOOD VULNERABILITY ASSESSMENT

1930-2130

Welcome Reception and Banquet - Formal Attire

(Air Force Auditorium, Buses leaving Taj Palace 1845-1900 hrs)

Tuesday, 28 March 2006

0830-1015

Session 5: Plenary II (Durbar Hall)

Aid to Civil

Moderators: Surgeon Vice Admiral P Arora, SM, VSM and Colonel Ronald Sutherland

Lieutenant Colonel Larry Connell, United States - Hawaii

MILITARY SUPPORT FOR DISASTER RESPONSE

Group Captain Tracy Smart, Australia

PLAYING OUR PART: ROYAL AUSTRALIAN AIR FORCE HEALTH SERVICES RESPONSE TO MASS DISASTERS IN ASIA

Lieutenant Colonel Shusei Ikegami, Japan

THE GOAL FOR THE MEDICAL SUPPORT OF OVERSEAS DISASTER RELIEF ACTIONS BY JAPAN GROUND SELF DEFENSE FORCE

Wing Commander KJS Makker, India

**DISASTER MEDICAL MANAGEMENT DURING FLASH FLOODS:
MUMBAI 7/26**

1015-1045

Morning Tea Break (Shahjehan Hall)

Poster Viewing (Mumtaz Hall)

1045-1230

Session 6: Plenary III (Durbar Hall)

HIV/AIDS and the Military: Together We Can & Will Make A Difference

Moderators: Lieut General ML Chawla, PVSM, VSM and Lieut Colonel Thomas Crabtree

Colonel AK Verma, India

**HIV AIDS PREVENTION AND CONTROL PROGRAMME IN INDIAN
ARMED FORCES**

Major General Eric Schoomaker, United States

HIV VACCINE TRIALS IN THE MILITARY

Major General Suebpong Sangkharomya, Thailand

THAILAND REFOCUSES ON HIV/AIDS PREVENTION

Colonel L R Sharma, VSM, India

**THE INDIAN ARMY EXPERIENCE WITH HIGHLY ACTIVE
ANTIRETROVIRAL THERAPY AT BASE HOSPITAL, DELHI CANTT**

1230-1315	Lunch (Shahjehan Hall)
1315-1345	Poster Session (Mumtaz Hall)
1345-1515	Concurrent Sessions
1345	Breakout Session 7A: HIV/AIDS I (Durbar Hall)

Moderators: Major General J Jayaram, AVSM and Commander Scott Giberson

Major Meriane Muvangua, Namibia

**HIV/AIDS IN THE MILITARY: LESSONS LEARNT IN PREVENTION, CARE,
TREATMENT AND SUPPORT – NAMIBIAN EXPERIENCE**

Colonel Lam Hung, Vietnam

**HIV/AIDS: KNOWLEDGE, ATTITUDE, PRACTICE, AND BEHAVIOR OF
NEW RECRUITS**

Lieutenant Colonel K Shanmuganandan, India

**A STUDY OF EMERGENCIES IN HIV PATIENTS IN LARGE TERTIARY
CARE TEACHING HOSPITAL OF THE INDIAN ARMED FORCES**

Captain David Schnabel, United States

A SEROEPIDEMIOLOGIC INVESTIGATION OF HIV-1
SEROCONVERSIONS AMONG U.S. MILITARY SERVICEMEMBERS
DEPLOYED TO OPERATIONS ENDURING FREEDOM AND IRAQI
FREEDOM

1345 **Breakout Session 7B: Aid to Civil
(Jehangir Hall)**

Moderators: Major General BK Mohanti, AVSM and Lieutenant Colonel Mary Hardy

Dr. Kelly McQueen, United States

MILITARY SUPPORT IN CIVILIAN AID AND CIVILIAN SUPPORT IN
MILITARY INTERVENTION

Surgeon Commander Sameer Kapoor, India

MEDICAL CHALLENGES AT A FORWARD AIR BASE IN RESPONSE TO
A NATURAL DISASTER - THE TSUNAMI EXPERIENCE

Colonel Eugene Bonventre, United States

CIVIL-MILITARY ACTIVITIES IN STABILITY OPERATIONS

Colonel Gary Vroegindewey, United States

PRINCIPLES OF MEDICAL DISASTER RESPONSE - THE
TSUNAMI MODEL

1345 **Breakout Session 7C: Simulation Training I
(Roshanara Hall)**

Moderators: Benjamin Berg, MD and Dale Vincent, MD, University of Hawaii

Benjamin Berg, United States - Hawaii

SIMULATION TRAINING TECHNOLOGIES

Dr. Paul Phrampus, United States

EMBEDDING SIMULATION INTO EDUCATION PROGRAMS

Major Peter Cuenca, United States

SIMULATED TRAINING FOR U.S. ARMY MEDICS

1345

**Breakout Session 7D: Family Medicine
(Arcade Hall)**

Moderators: Brigadier G Rajagopal, AVSM and Major Nancy Steele

Surgeon Commander S Shankarnarayan, India

INTERVENTION FOR INFECTION CONTROL, INFECTION AND
ANTIBIOTIC USE IN LEVEL 2 NICU - A 5-YEAR STUDY

Lieutenant Colonel Mark Burnett, United States - Hawaii

THE EVOLVING ROLE OF PEDIATRICIANS IN THE U.S. ARMY

Lieutenant Colonel Manash Biswas, India

CORRELATION OF THREE SCREENING TECHNOLOGIES IN CASES OF
CERVICAL DYSPLASIA AMONG DEPENDENTS OF ARMED
FORCES PERSONNEL

Lieutenant Colonel K Kapur, India

UTERINE BALLOON THERAPY - MENORRHAGIA MANAGEMENT MADE
EASY

1515-1545

Afternoon Tea Break (Shahjehan Hall)

Poster Viewing (Mumtaz Hall)

1545-1715

Concurrent Sessions

1545

**Breakout Session 8A: HIV/AIDS II
(Durbar Hall)**

Moderators: Major General NK Bhandari, VSM and Major Robert Paris

Dr. Glenn Schnepf, WHO

WORLD HEALTH ORGANIZATION (WHO) HIV/AIDS PROGRAMS.

Surgeon Commander Sundeep Bhandari, India

IMPLEMENTATION OF INFORMATION, EDUCATION AND
COMMUNICATION ACTIVITIES IN A NAVAL STATION

Brigadier Waheed Uz Zaman Tariq, Pakistan

SUCCESSFUL PREVENTIVE EFFORTS RESULTING IN CONTROL OF HIV
EPIDEMIC IN PAKISTAN ARMED FORCES: TWO DECADES OF
EXPERIENCE

Lieutenant Suneil Ramchandani, United States

HIV PATIENT EVALUATION: A SURVEY OF KNOWLEDGE, ATTITUDES,
AND PRACTICES OF ANTIRETROVIRAL THERAPY IN INDIA

First Lieutenant Sutchana Tabprasit, Thailand

EXPRESSION OF ACTIVATION MARKER (CD38) ON CD8 T-CELL IN HIV-
1 INFECTED

1545

**Breakout Session 8B: Neuropsychology
(Jehangir Hall)**

Moderators: Brigadier S Sudershanan and Colonel Peter Weber

Wing Commander Amitabh Saxena, India

COMBAT STRESS IN LOW INTENSITY COMBAT OPERATIONS

Lieutenant Colonel Sukhawarn Chalita, Thailand

SUICIDAL TENDENCY AMONG MILITIAS: A STUDY IN THE 3RD ARMY
REGION ALONG THE THAI BORDER

Colonel K K Singh, SM, VSM, India

STROKE IN YOUNG SOLDIERS

Colonel Peter Weber, United States - Hawaii

THE SOLDIER READINESS PROGRAM EXPERIENCE OF THE
NEUROLOGY CLINIC AT TRIPLER ARMY MEDICAL CENTER,
HONOLULU, HAWAII

1545

**Breakout Session 8C: Simulation Training II
(Roshanara Hall)**

Moderators: Benjamin Berg, MD and Dale Vincent, MD, University of Hawaii

Benjamin Berg, United States - Hawaii

SIMULATION TRAINING TECHNOLOGIES

Dr. Paul Phrampus, United States

EMBEDDING SIMULATION INTO EDUCATION PROGRAMS

Major Peter Cuenca, United States

SIMULATED TRAINING FOR U.S. ARMY MEDICS

1545

**Breakout Session 8D:
High Altitude and Environmental Medicine I
(Arcade Hall)**

Moderators: Brigadier BM Nagpal, VSM** and Colonel Michael Brumage

Brigadier SM Sharma, India

FROSTBITE AT HIGH ALTITUDE - OUR EXPERIENCE

Lieutenant Colonel Jyoti Kotwal, India

STUDY OF PATHOLOGICAL FACTORS FOR HIGH ALTITUDE
COAGULOPATHY

Commander Mark Lyles, United States

THE CHEMICAL, BIOLOGICAL, AND PHYSICAL CHARACTERIZATION
OF AIRBORNE MICRO-PARTICULATES FROM KUWAIT

Colonel Ruethai Klannukarn, Thailand

INCIDENCE AND RISK FACTORS RELATED TO NOISE TRAUMA IN MALE
SOLDIERS

Wednesday, 29 March 2006

0630-2000

Offsite Activities

Buses Depart Taj Palace Hotel Entrance

Agra and Taj Mahal Cultural Tour

0730-0930

**Simulation and Training Practicum I
(Durbar Hall)**

Moderators: Benjamin Berg, MD, University of Hawaii; Major Peter Cuenca, Dept. of Combat

0945-1145 **Simulation and Training Practicum II
(Durbar Hall)**

Moderators: Benjamin Berg, MD, University of Hawaii; Major Peter Cuenca, Dept. of Combat
Medic Training; Paul Phrampus, University of Pittsburgh, WISER Institute

Thursday, 30 March 2006

0830-1030 **Session 9: Plenary IV (Durbar Hall)
Aerospace and Naval Medicine**

Moderators : Air Marshal HK Maini, VSM and Lieutenant Colonel Debra Mark

Major General Charles Green, United States

AEROSPACE MEDICINE UPDATE

Group Captain Navin Rattan, VSM, India

**MEDICAL EVALUATION AND RE-FLIGHTING OF AIRCREW IN INDIAN
AIR FORCE**

Captain W. Robert Kiser, United States - Hawaii

U.S. NAVAL DEPLOYABLE MEDICAL CAPABILITIES

Surgeon Commodore M John, India

**COMPARATIVE ANALYSIS OF PERSONALITY CHARACTERISTICS OF
DIVERS AND SUBMARINERS**

1015-1045 **Morning Tea Break (Shahjehan Hall)
Poster Viewing (Mumtaz Hall)**

1045-1230 **Session 10: Plenary V (Durbar Hall)
Pandemic Flu**

Moderators: Lieutenant General Y Singh, VSM and Lieutenant Colonel Mylene Huynh

Dr. Sampath Krishnan, WHO
AVIAN INFLUENZA IN INDIA

Dr. Glenn Schnepf, WHO
AVIAN INFLUENZA (H5N1) - THE WORLD HEALTH ORGANIZATION
(WHO) PERSPECTIVE

Major General Bui Dai, Vietnam
AVIAN INFLUENZA (AH5N1) SITUATION IN VIET NAM, 2003-2005

Colonel James Neville, United States
THE U.S. MILITARY'S GLOBAL INFLUENZA SURVEILLANCE PROGRAM

1230-1315 Lunch
(Shahjehan Hall)

1315-1345 Poster Session II
(Mumtaz Hall)

1345-1515 Concurrent Sessions

1345 Breakout Session 11A: Pandemic Flu
(Shahjehan Hall)

Moderators: Lieutenant General MP Jaiprakash, AVSM and Colonel Michael Brumage

Colonel Gary Vroegindewey, United States
AVIAN INFLUENZA - A BIRD'S EYE VIEW

Dr. James Campbell, United States
MODELING EFFECTS ON ORGANIZATIONAL OPERATIONS OF A
WIDESPREAD AVIAN FLU OUTBREAK

Colonel Michael Brumage, United States - Hawaii
CURRENT UPDATE ON AVIAN INFLUENZA

PANDEMIC FLU PANEL DISCUSSION

Moderators: Lieutenant Colonel Mylene Huynh; Colonel Michael Brumage; Major Peter Breed

1345

Breakout Session 11B: HIV/AIDS III

HIV/AIDS and the Military: Making A Difference Progress to Date Continues (Jehangir Hall)

Moderators: Colonel A C Anand, VSM and Lieutenant Colonel Thomas Crabtree

Commodore Imansyah Ali, Indonesia

DEVELOPING HIV/AIDS PROGRAM IN THE INDONESIAN ARMED FORCES

Colonel Pushkar Singh, India

HIV/AIDS PREVENTION: A SOCIOCULTURAL APPROACH FOR ENTIRE FAMILY

Colonel Huang Shaoping, China

HIV/AIDS IN CHINA

Lieutenant Colonel R M Gupta, India

DETECTION OF HIV-1 - 1A/AE CIRCULATING RECOMBINANT FORM IN INDIA: POSSIBLE IMPLICATIONS

1345

Breakout Session 11C: Aviation Medicine I (Roshanara Hall)

Moderators: Air Vice Marshall JK Gupta, AVSM and Lieutenant Colonel Jimmy Barrow

Air Vice Marshal Tony Austin, Australia

FLIGHT SURGEONS: CHAMPIONS OF PATIENT SAFETY

Colonel David Schall, United States - Hawaii

CURRENT ISSUES IN OPERATIONAL AEROSPACE MEDICINE WITHIN THE U.S. PACIFIC AIR FORCES

Group Captain Pankaj Tyagi, India

OPERATING SCHEDULES FOR SUDDEN INDUCTION OF UN-ACCLIMATIZED OR PARTIALLY ACCLIMATIZED AIRCREW FOR AIR OPERATIONS AT HIGH ALTITUDE

Major Tony Kim, United States

HOW THE U.S. AIR FORCE PREPARES HER MEDICS FOR WAR - A
HISTORICAL PERSPECTIVE

1345 **Breakout Session 11D: Infectious Diseases I
(Arcade Hall)**

Moderators: Major General OP Mathews, SM and Colonel Terry Klein

Colonel S Sathyanarayana, India

POLYMICROBIAL INFECTIONS IN AIDS- OUR EXPERIENCE WITH
NEEDLE NECROPSIES

Brigadier SK Handa, India

EPIDEMIOLOGICAL INVESTIGATION OF OUTBREAK OF VIRAL
HEPATITIS

Senior Colonel Vu Quoc Binh, Vietnam

PLASMA PRIMAQUINE CONCENTRATIONS FOR RADICAL CURE OF
PLASMODIUM VIVAX MALARIA

Lieutenant Commander Scott Thornton, United States - Hawaii

VIRAL GASTROENTERITIS SURVEILLANCE IN BIG DECKS: THE FIRST
22 OUTBREAKS

1515-1545 **Afternoon Tea Break (Shahjehan Hall)
Poster Viewing (Mumtaz Hall)**

1545-1715 **Concurrent Sessions**

1545 **Breakout Session 12A: Operational Medicine III
(Shahjehan Hall)**

Moderators: Brigadier Naresh Kumar, VSM and Lieutenant Colonel Craig Bottoni

Lieutenant Colonel Steven Thng, Singapore

RESPONDING TO THE EARTHQUAKE IN NIAS 05, OUR EXPERIENCE
AND LESSONS LEARNT

Major Wesley Palmer, United States - Guam

36 CONTINGENCY RESPONSE GROUP/PACAF MEDICAL RESPONSE TO
LEYTE LANDSLIDE

Group Captain Amanda Dines, Australia

OPERATION PAKISTAN ASSIST

Lieutenant Colonel Jimmy Barrow, United States - Hawaii

AIR EVACUATION VALIDATION CONCERNS IN THE PACIFIC THEATER

**1545 Breakout Session 12B: Trauma and Surgery
 (Jehangir Hall)**

Moderators: Major General GS Misra, VSM and Colonel Ronald Sutherland

Lieutenant Colonel MM Harjai, India

GOLDEN HOUR AND RULE OF TRAUMA

Captain Erick Martell, United States - Germany

PAKISTAN EARTHQUAKE DISASTER RELIEF

Colonel BNBM Prasad, SM, India

A COMPARATIVE STUDY ON THE EFFICACY OF PLEURAL DRAINAGE
BY PIGTAIL CATHETER AND CHEST TUBE IN STABLE HEMOTHORAX
DUE TO BLUNT TRAUMA

Colonel PP Varma, India

RENAL TRANSPLANTATION IN ARMED FORCES: ARMY HOSPITAL
(R&R) EXPERIENCE

**1545 Breakout Session 12C: Navy Medicine
 (Roshanara Hall)**

Moderators: Surgeon Captain George Varghese and Lieutenant Commander Scott Thornton

Surgeon Coaptain Emmanuel James, India

VERTIGO IN THE SUBSURFACE MARINE ENVIRONMENT: THE NAVAL
EXPERIENCE

Commodore Michael Garvan, Australia

ROYAL AUSTRALIAN NAVY (RAN) HEALTH RESERVES; MEETING THE
CAPABILITY CHALLENGE

Captain Dale Mole, United States - Japan

SUBMARINE ESCAPE AND RESCUE IN THE 21ST CENTURY

Lieutenant Robin Barrett, Australia

AUGMENTATION OF PATIENT CARE AT SEA

1545 **Breakout Session 12D: Environmental Medicine II
(Arcade Hall)**

Moderators: Colonel A Datta, VSM and Colonel Julie Zadinsky

Lieutenant Colonel SKM Rao, India

DESIGNING VENTILATION SYSTEMS IN HOSPITALS

Ms. Lydia Law, Singapore

DEVELOPMENT OF A MICRO-COOLING SYSTEM TO MITIGATE HEAT
STRESS IN ENCAPSULATED SUITS

Dr. T P Baburaj, India

HYPOHYDRATION ON EXPOSURE TO HEAT STRESS AND
INTERVENTION WITH ERGOGENIC FLUIDS

Ms. Joselin Lim, Singapore

A COMPARISON OF THE EFFICACY OF HEAT ACCLIMATION UNDER
HOT-WET OR HOT-DRY CONDITIONS

1930-2130 **APMMC XVI Banquet - Formal Attire
(Durbar Hall)**

0830-1000 Concurrent Sessions

0830 Breakout Session 13A: Aviation Medicine II
(Roshanara Hall)

Moderators: Air Commodore RK Ganjoo, AVSM, VSM and Colonel John Cinco

Colonel William Courtney, United States

U.S. AIR FORCE DEPLOYMENT HEALTH PROGRAMS

Group Captain James Ross, Australia

THE ADAPT PROJECT: MODELLING PILOT ACCOMMODATION AND
TASK PERFORMANCE

Lieutenant Colonel Paul Gardetto, United States - Japan

AIRCRAFT SIMULATOR BASED SPATIAL DISORIENTATION PROFILES

Lieutenant Colonel Joseph Anderson, United States

U.S. AIR FORCE AVIATION FATIGUE MANAGEMENT PROGRAM

0830 Breakout Session 13B: Disease Surveillance
(Jehangir Hall)

Moderators: Dr. Sampath Krishnan and Captain Miguel Arroyo

Dr. Rina Tilak, India

NEED FOR ENTOMOLOGICAL SURVEILLANCE IN THE INDIAN ARMED
FORCES: AN APPROACH PAPER

Lieutenant Justin Green, United States - Peru

PILOT PROGRAM OR LABORATORY SURVEILLANCE FOR INFECTIOUS
DISEASE THREATS TO PERUVIAN PEACEKEEPERS RETURNING FROM
THE U.N. STABILIZATION MISSION IN HAITI

Wing Commander Rajesh Vaidya, India

HIGH ALTITUDE PULMONARY OEDEMA SURVEILLANCE IN THE
INDIAN ARMED FORCES

0830 **Breakout Session 13C: Nursing in the Military II**
(Mumtaz Hall)

Moderators: Colonel S Sood and Lieutenant Colonel Debra Mark

Colonel (Ret) Dolores Martha Turner, United States

A MODEL FOR DEVELOPING INTEROPERABILITY AMONG MILITARY
NURSES FOR CIVILIAN AID AND PEACEKEEPING OPERATIONS

Lieutenant Colonel Mala Singh, India

TRAINING OF NURSES TO MANAGE RE-EMERGING DISEASES

Lieutenant Colonel Saisamorn Chaleoykitti, Thailand

EFFECTS OF EMPOWERMENT PROGRAM ON JOB PERFORMANCE OF
STAFF NURSES

Lieutenant Colonel Mary Hardy, United States - Hawaii

THE ROLE OF MILITARY NURSES IN DISASTER PREPAREDNESS

0830 **Breakout Session 13D: Research**
(Arcade Hall)

Moderators: Colonel R Bhalwar and Colonel Raj Gupta

Dr. Ashima Saxena, United States

PRODUCTION, CHARACTERIZATION AND USE OF BIOSCAVENGERS
FOR ORGANOPHOSPHORUS COMPOUND TOXICITY

Colonel Velu Nair, VSM, India

STEM CELL TRANSPLANTATION: ARMY HOSPITAL EXPERIENCE

Lieutenant Colonel Jennifer Thompson, United States

PROTECTING HUMAN RESEARCH SUBJECTS: THE USAMRMC
PERSPECTIVE

Mr. Chin Leong Lim, Singapore

THE EFFECTS OF OVERLOAD TRAINING ON ENDOTOXEMIA, PRO-INFLAMMATORY CYTOKINE AND ANTI-LIPOPOLYSACCHARIDE RESPONSES DURING EXERCISE UNDER HEAT STRESS

R C Sawhney, India

RAPID ACCLIMATIZATION OF SOLDIERS IN HIGH ALTITUDE - POSSIBLE USE OF GLUCOCORTICOID THERAPY

1000-1130 **Concurrent Sessions**

1000 **Breakout Session 14A: Lifestyle Disorders
(Arcade Hall)**

Moderators: Surgeon Rear Admiral JM Borcar, VSM and Lieutenant Colonel Mark Burnett

Colonel Rajvir Bhalwar, India

SYNDROME 'X' - THE INDIAN PARADOX: EPIDEMIOLOGICAL STUDY OF ITS ROLE AS A DETERMINANT OF CORONARY RISK AMONG HEALTHY MIDDLE AGED INDIAN ARMY PERSONNEL

Ms. Sataporn Soonyo, Thailand

FACTORS RELATING TO SMOKING BEHAVIOR AMONG PRIVATES IN PHRAMONGKUTKLAO HOSPITAL

Lieutenant Colonel Anil Dhall, SM, India

RISK FACTOR PROFILE OF CORONARY ARTERY DISEASE IN <40 YEARS OLD SERVICE PERSONNEL IN A REFERRAL SERVICE HOSPITAL

Air Commodore K M Suryanarayana, VSM, India

PREVENTION OF TYPE 2 DIABETES MELLITUS

1000 **Breakout Session 14B: Infectious Diseases II
(Mumtaz Hall)**

Moderators: Major General S Mukherjee and Colonel Susan Fraser

Colonel Terry Klein, United States - Korea

EPIDEMIOLOGY OF HANTAVIRUS CASES AMONG U.S. PERSONNEL TRAINING NEAR THE DMZ, REPUBLIC OF KOREA

Colonel A C Anand, VSM, India

HEPATITIS B AND C INFECTION AMONG SOLDIERS: AN OVERVIEW

Captain Michael Arnett, United States - Hawaii

CONTACT TRANSFER VACCINIA RECEIVED DURING SMALL UNIT PHYSICAL TRAINING

Colonel K K Lahiri, India

DIAGNOSTIC EFFICACY OF POLYMERASE CHAIN REACTION (PCR) IN BRONCHOALVEOLAR LAVAGE FROM PATIENTS WITH SMEAR-NEGATIVE TUBERCULOSIS

1000

**Breakout Session 14C: Vaccines
(Roshanara Hall)**

Moderators: Colonel LS Vaz and Lieutenant Colonel Robert Gibbons

Dr. Sina Bavari, United States

EBOLA AND MARBURG VIRUS-LIKE PARTICLE VACCINES

Major John Aaskov, Australia

DENGUE VACCINES - ARE WE AIMING AT A MOVING TARGET?

Lieutenant Colonel Mammen Mammen, United States - Thailand

A PHASE 1/2 TRIAL OF A TETRAVALENT LIVE-ATTENUATED DENGUE VACCINE IN FLAVIVIRUS NAIVE THAI INFANT

Major Glenn Bessinger, United States - Hawaii

BENIGN HYPERSENSITIVITY REACTIONS TO SMALLPOX VACCINE

1000

**Breakout Session 14D: Professionalism and Technology
(Jehangir Hall)**

Moderators: Brigadier Mahavir Singh, VSM and Colonel Arthur Wallace

Command Sergeant Major Joel Jenkins, United States - Hawaii

NONCOMMISSIONED OFFICERS LEVERAGING THE EXPERIENCE

Song-jun Wang, China

THE DEVELOPMENT TREND OF MILITARY HEALTH SERVICE AND
MILITARY MEDICINE

Colonel John Cinco, United States - Hawaii

U.S. AIR FORCE INTERNATIONAL HEALTH SPECIALIST PROGRAM: A
TOOL FOR INTEROPERABILITY

Colonel Rajvir Singh, India

HOSPITAL INFORMATION SYSTEMS - LEVERAGING INFORMATION
TECHNOLOGY

1130-1200	Tea Break (Shahjehan Hall)
1200-1330	Closing Ceremony (Durbar Hall)
1330-1430	Lunch (Shahjehan Hall)

Abstracts : Oral

EVOLUTION OF MASS CASUALTY MEDICAL EVACUATION WITHIN THE USAIR FORCE

Colonel David Schall
United States

Abstract

The author will discuss the evolution of how the USAF Aeromedical Evacuation system has changed to allow moving more seriously ill patients over longer distances. The author will also discuss aeromedical evacuation in times of natural disaster as in the Tsunami and most recently in the Hurricane Katrina. Anticipating communication challenges and lack of a full understanding of the extent of the disaster require the forces to be able to adapt quickly to their environment. Providing light, lean, life-saving, ready capability, the USAF has adapted to be able to respond to needs when called upon.

MANAGEMENT OF WAR WOUNDS

Brig Pradeep Bhargava, VSM,
Armed Forces Medical Services, India

Abstract

Various factors produce difference between civil and war casualties e.g. ballistic effect or the blast effect of the missile, delay in evacuation due to hostile terrain, lack of evacuation facilities, arrival of mass casualties, there may be no first aid available and soldiers may be exhausted due to prolonged military operations. These factors dictate adoption of different strategies for management of war wounds.

After resuscitation, the general condition of patient, extent of local injuries, capabilities of surgical team, number of casualties held and expected further, and war scenario, decide if the patient needs evacuation.

In injuries of upper limbs, amputation should be avoided. But in lower limbs since good prosthesis are available, salvage should only be done when there is a proper plan of bone union and function preservation.

Half-hearted reconstructive procedures should not be attempted in periphery. When surgery is done in smaller centers, it is found that the transfer of casualty is delayed, because the surgeon tends to wait to see his result and holds the patient longer than need. By enlarging he transfers the patient only when some complication like fever, infection, or flaps develops. Only early cover can achieve good functional and cosmetic results. Delay in wound cover means more fibrosis and poor result. If decided for salvage, do thorough wound debridement using tourniquet and magnification. After debridement, wound should look like surgical wound after debridement. Nerve and arteries suffer extensive damage and usually need bridge grafting. Wound healing depends on wound infection and wound debridement. The final outcome depends upon how soon the wound healed.

Management of the wounds has been illustrated through pre and post surgery photographs of war victims.

THE ROYAL THAI ARMY MEDICAL DEPARTMENT AGAINST THE SOUTHERN UNREST

Uppathamnarakorn, Ronnawit (Major General)
Thailand

Abstract

The unrest in the three provinces of Southern Thailand is a threat to the national security. There are many factors worsening the situation, including differences in cultures, history, religions, nationalities, and unjust acts of government officers. The Royal Thai Army considers the southern unrest the emergency missions that are in need of a commitment of essential resources. The key success factor in anti-terrorism is good public relations. The Royal Thai Army Medical Department supports the Royal Thai Army to achieve the objectives by cooperating with local civilian health services, to conserve the armed forces and to make good public relations.

The missions comprise of 5 minor projects; field first aid, aerial medical evacuation, war surgery, mobile medical units, and forward army medical department.

EXTREMITY INJURIES AND LIMB SALVAGE TECHNIQUES IN OPERATION IRAQI FREEDOM

Thomas Crabtree, Lieutenant Colonel
U.S. Army, Tripler AMC, Hawaii, United States

Abstract

OIF Extremity Injuries and Limb Salvage Techniques Thomas G. Crabtree, MD, FACS LTC(P), US Army The scope of extremity injuries we see in Operation Iraqi Freedom (OIF) is little different from that seen in previous conflicts. The wounds range from traumatic amputation of a limb or limbs to complicated mixed injuries involving all manner of bone and soft tissue to minor injuries such as simple fractures or simple soft tissue wounds. What does appear unique to this war is the situation where we see ever increasing numbers of multiple and severely injured extremities in patients who are otherwise free from serious injury. Typically, these are patients whose individual body armor (IBA) has performed beautifully ? beautifully in the sense that the head, eyes, chest and abdomen have been kept free of life ?threatening injury. These patients present with extremity injuries familiar in scope but certainly of a volume, degree and complexity the average practitioner, indeed the experienced practitioner, finds very challenging. In other words, the injured soldiers and civilians of OIF present us with a new type of patient. This new patient would have certainly died in previous conflicts. Instead, in OIF, especially with the success and widespread use of the IBA, we see a novel group of patients with devastating and complicated extremity injuries who are often otherwise uninjured. Certainly this sort of patient existed in previous wars but I am increasingly convinced we are seeing more of this type of patient and are experiencing new challenges in terms of volume, complexity and ultimately the true measures of success- limb salvage and limb rehabilitation. The sources of injury, like the scope of extremity injuries, are also similar to conflicts past. The sources include direct and indirect fire, improvised explosive devices (IEDs), burns, crush injuries, mines, electrical injuries noncombat violence, infection and even congenital defects and old traumatic sequelae. Of note, military physicians are increasingly called upon to provide care for the civilian populace. If anything is unique to OIF in terms of sources of extremity injury it may be the heretofore unseen volume of patients with multiple sources of extremity injury. It is not unusual to care for a patient with a GSW, multiple shrapnel wounds, burned and crushed tissue all in a single extremity. Again,

limb salvage and limb rehabilitation are mightily challenged in this setting. This presentation will catalogue my experience with a range of OIF extremity injuries and survey the scope of injuries I attended from May ? November 2005. I trust the attendee will better appreciate the fact driven home to me by this experience that the surgeon who tackles modern combat injuries, especially extremity injuries, needs to be familiar with a wide range of injuries, facile with a multitude of operative and non-operative techniques and reasoned and philosophical when faced with the need to amputate. Combat situations accelerate our learning as surgeons. The scope of extremity wounds OIF patients and physicians experience presents us with new lessons to master.

OCULAR INJURIES IN COUNTER INSURGENCY OPERATIONS

Brig DP Vats, SM, VSM
Armed Forces Medical Services, India

Abstract

Ocular trauma is a significant cause for the morbidity amongst military personnel. In recent times the war doctrine has undergone a shift and greater emphasis is laid on injuring the enemy rather than killing him. The weaponry is splinter based and causes multi-organ damage. We have studied Ocular Trauma over ten years in 879 patients and have analyzed the results so as to optimize management protocols to the changing scenario. The importance of multidisciplinary approach is highlighted.

EFFECTS OF CORNEAL REFRACTIVE SURGERY (CRS) ON MILITARY OPERATIONS

Yang, Adeline (Ms.)
Singapore

Abstract

In Singapore, myopia currently affects approximately 83% of National Servicemen in Singapore. Though shortsightedness can be corrected with glasses and contact lenses, some of these optical aids can limit or even prohibit use of certain wearable devices such as night vision goggles, helmet mounted displays, and/or chemical protective masks in military and civilian settings. With the increasing acceptance and popularity of corneal refractive surgery (CRS) in Singapore, CRS was being considered as an option for the correction of myopia to meet the SAF's operational requirements. This study aims to compare the efficacy, predictability, stability, and safety of Laser-assisted in-situ keratomileusis (LASIK) versus Photorefractive Keratectomy (PRK) for the correction of low and moderate myopia and astigmatism. In total, 191 SAF personnel were selected for CRS (77 Army, 64 Navy and 50 Air Force personnel). A pre surgery and 6 months post surgery operation evaluation was done for all 3 groups to see how CRS affects their performance. Eye examinations were done before and after each chamber run. The eye examinations included Visual Acuity (VA), Contrast Sensitivity (CS), slit lamp, Goldmann Tonometry and Orbscan. The 77 from Army were to perform 2 simulated tests. Individual Marksmanship Trainer (IMT) takes score of their shooting skills and Amour Gunnery Tactical Simulation (AGTS) takes the speed of tank detection and recognition. The 64 Navy personnel went through tests like Underwater VA and CS tests, SIMBAD Ship-to-Air Missile simulator which records the time for locating and locking on to targets and 3 Hyperbaric Chamber dives. All RSAF personnel went through 8 hour stay in the Environmental Chamber and the Altitude Chamber. As for the 15 pilot trainees, they had to undergo G-Fet.

RESULTS

For the clinical results, the mean visual acuity of the 191 (n=382) subjects prior to surgery was -0.06. Subsequent assessment found the mean VA to stabilise at -0.10, 6 months after surgery. Mean CS improved slightly from 1.74 (pre surgery) to 1.76 (post surgery). The mean VA & CS difference pre

and post surgery was -0.04 (W-test, Asymp. Sig. (2-tailed) < 0.01) and 0.02 [W-test, Asymp. Sig. (2-tailed) < 0.01] respectively.

Separating the data into PRK and LASIK, both surgeries' VA results follow a similar trend. For PRK, the mean VA difference was -0.05 [W-test, Asymp. Sig. (2-tailed) < 0.01] while for LASIK, the mean VA difference was -0.03 [W-test, Asymp. Sig. (2-tailed) < 0.01]. Similarly, there was no appreciable difference in CS performance after PRK or LASIK surgery. The mean CS difference for PRK was 0.04 [W-test, Asymp. Sig. (2-tailed) < 0.01] and 0.01 [W-test, Asymp. Sig. (2-tailed) = 541] for LASIK which was not statistically significant compared to PRK. From the clinical point of view, the surgeries conducted for this study did not show any significant advantage of one surgery against the other.

For the operational evaluation results, there was minimal change, which points towards equal or better, in visual performance experiences across various operational evaluations. Details of these results will be presented during the conference.

CONCLUSION

Therefore, corneal refractive surgery was safe, predictable and effective for low to moderate myopia. Both functional and operational visual performance was consistent, despite some adverse events. As there is no strong evidence in this study to help to evaluate the risk of LASIK flap complication in extreme hazardous operational environment, it is advisable to restrict the critical vocations (Commando, Divers and Pilots) to PRK.

TRACHEAL INJURIES

Col PS Sukthankar
Armed Forces Medical Services, India

Abstract

Tracheal injuries are infrequent, but they are often life threatening. Prompt detection and appropriate surgical techniques results in good results. Different methods such as Resection and Anastomosis, Tracheoplasty, Tracheal Stenting, Core-out with Lasers and Repeated Dilatation have been described. However none have laid down criteria, based on which the patients can be preoperatively selected for a given method of repair. This study was aimed to analyze the preoperative findings and postoperative results to arrive at the selection criteria. Twenty-five patients of symptomatic tracheal stenosis were managed by Tracheoplasty, Resection & Anastomosis as well as Stenting. All cases were followed up for one year. Pre-op findings and results of procedures were analyzed to arrive at selection criteria for each procedure to minimize failures. Tracheoplasty was best suited when only anterior wall or when only two walls of the trachea were involved. Concentric stenosis responded well to Resection & Anastomosis. Permanent stenting with self expanding uncovered Nitinol stents was associated with crusting and granulations in all the cases and are best avoided and instead stenting with Montgomery T - tubes for more than a year is preferred.

IMPACT OF NASAL SYMPTOMS ON THE QUALITY OF LIFE OF FRESH INDUCTED SOLDIERS IN HIGH ALTITUDE

Lt Col Rakesh Datta, Col S S Panwar
Armed Forces Medical Services, India

Abstract

Troops deployed in high altitude areas of Ladakh face nasal problems in the form of obstructive nasal symptoms and recurrent epistaxis. This study analyses the changes in the nasal mucocilliary transit times (NMTT) and deterioration in quality of life of troops due to such symptoms on first induction into high altitude.

A prospective study on 100 healthy volunteers was done. Mucocilliary transit time was measured and a standardized quality of life questionnaire (RQLQ) administered at onset and after a period of three months in high altitude. Thereafter the subjects were divided into two groups and one group administered normal saline nasal drops. After a further period of three months, the observations were taken and the results statistically analyzed.

The mucocilliary transit time was prolonged after a three month stay in high altitude ($p < 0.005$). Normal saline nasal drops were successful to improve the nasal mucocilliary transit times ($p < 0.05$). There was a statistically significant derangement in the 'Quality of Life' after a three month stay in high altitude which was partially through significantly offset by administering normal saline nasal drops ($p < 0.05$).

Nasal symptoms are very common amongst troops deployed in Ladakh. There is an increase in mucocilliary transport time after such exposure denoting a deranged physiology of the nasal mucosa. This leads to a statistically significant adverse impact on the quality of life of the troops deployed. The use of normal saline nasal drops is a simple and effective method of reversing some of these changes.

STRESS-RELATED MALARIA RECRUDESCENCE AND ITS POSSIBLE ROLE IN THE GENESIS OF MALARIA EPIDEMICS

G. Dennis Shanks, Colonel (Retired)
U.S. Army, Enoggera, Australia

Abstract

Epidemic malaria occurs when either meteorological or human-vector changes shift exposure in a previously low transmission area. The initial focus of infection is often cryptic arising from military, refugee, or laborer populations in the tropics. Historically many malariologists attributed epidemics to tropical accumulations of labor where construction work by poorly-paid and badly-treated coolie labor generated large outbreaks of malaria. These settings are very difficult to study and usually attract attention only when high mortality rates stop construction. Surgical stress such as Caesarean section and trauma such as land mine injuries have been shown to have a high rate of malaria recrudescence in populations that are already infected with falciparum malaria. That recrudescence of falciparum malaria in stressed adult populations might serve as the initial focus of subsequent malaria epidemics has been suspected but unproven. The Andaman Islands Penal Colony operated from 1858 to 1945 and was the scene of many severe malaria outbreaks of great mortality. Multiple factors played a role in the Penal Colony epidemics such as increased intake of prisoners, construction activity along the brackish swamps which were the home of the vector *Anopheles sundanicus*, and ineffective parasite suppression with sub-therapeutic doses of quinine. Malaria was not, however, native to the Andaman Islands so falciparum malaria must have been introduced by the prisoners and prison guards. The first epidemic after the founding of the colony killed the majority of the prisoners in a single year. Subsequent epidemics were associated with particularly stressed labor groups who had 2-3 times the sickness rates of similar labor groups with less arduous jobs. It seems likely that malaria recrudescence in stressed laborers formed the initial foci of malaria epidemics in this highly regimented adult population. Malaria epidemics continued in the face of extensive well-funded public health control programs indicating that detailed knowledge of the epidemiological situation is required to protect large tropical construction projects.

MALARIA THE SLAYER GIANT OF NORTH-EAST INDIA

Air Cmde MK Mishra
Armed Forces Medical Services, India

Abstract

North East India has only 3.7% of the Indian Population but accounts for 8-12% of total malaria burden of the country and contributes to 15-25% of deaths due to malaria. This article endeavors to outline the unique climatic, topographical and disease transmission pattern in this part of the country.

Data pertaining to malarial morbidity in the North East has been collected and elaborated upon. The unique characteristics favoring malarial transmission have been pinpointed. Situations peculiar to North East like tea-garden malaria and tribal-malaria have been described.

API in the North-East is about 4% with 55-60% of malaria being due to *P. Falciparum*. Assam with

71% of population of NE contributes to 54% of all malaria cases and 65% of *P. falciparum* infections. Arunachal Pradesh with only 2% of NE population contributes to 23% of all malaria cases. Chloroquine resistance is almost universal in the North East. A recent study in Assam, Arunachal border revealed 100% resistance to chloroquine in affected workers of a tea garden.

Malaria contributes to widespread mortality and morbidity in the north east India. A host of factors including climatic conditions, vector behavior pattern and geopolitical situation contributes to ineffective malaria control.

THE EFFICACY AND TOLERABILITY OF ARTESUNATE PLUS HIGH DOSE PRIMAQUINE FOR THE TREATMENT OF *PLASMODIUM VIVAX* MALARIA IN VIETNAM

COL Bui Tri Cuong, MAJGEN Nguyen Van Hoang Dao, Snr COL Nguyen, Dang Ngoa, COL Le Thi Thanh Thuy, LTCOL Nguyen Duy The, MAJGEN Dinh Ngoc' Duy, MAJGEN Bui Dai, Snr COL Nguyen Xuan Thanh and LTCOL Michael D. Edstein

Abstract

In many areas of Southeast Asia, the Southwest Pacific, the Indian sub-continent and South America the predominant *Plasmodia* species is *P. vivax*. Over the past 15 years there have been increasing reports of chloroquine-resistant and primaquine-tolerant strains of *P. vivax* in Southeast Asia and in the Southwest Pacific. The emergence and spread of such parasites has made the treatment of vivax malaria problematic with the standard combination of chloroquine (25 mg/kg over 3 days) and primaquine (15 mg or 30 mg daily for 14 days). We investigated the efficacy and tolerability of artesunate combined with high dose primaquine for the treatment of *P. vivax* in Vietnam. Twenty-eight Vietnamese G6PD normal adults (average weight 51 kg) with *P. vivax* were treated with artesunate (200 mg bid) for 2 days to abort the acute attack followed by primaquine (22.5 mg bid) for 7 days to eliminate latent liver stages and thus prevent relapses of chronic infection. The total dose of primaquine administered was 315 mg (or about 6.2 mg/kg), which is slightly greater than the 6 mg/kg recommended for the treatment of primaquine-tolerant infections such as the Chesson strain. Blood stage parasites were eliminated within 24 h after commencement of treatment and no asexual parasites were observed during the 28 days of follow-up. The artesunate-primaquine regime was well tolerated with mild gastrointestinal disturbances occurring in 2 patients during primaquine administration (1 with abdominal pain and diarrhoea and 1 with abdominal pain only). In a subset of 15 patients there was no statistical difference ($P > 0.05$) in hematological parameters including hemoglobin and hematocrit before commencing treatment and after the last administration of primaquine. Although these findings show that the artesunate-high dose primaquine regime was completely efficacious against the blood stages of vivax malaria, further studies are required to determine the effectiveness of the combination in preventing relapses. Nevertheless, artesunate-primaquine was markedly more effective in inhibiting the asexual parasites of *P. vivax* than a recent study in Thailand whereby artesunate alone given daily for 7 days had a cure rate at 28 days of only 48%.

Furthermore, the 9-day artesunate-primaquine course is considerably shorter than the standard 14-day chloroquine-primaquine course, which should lead to improve compliance and efficacy in preventing relapses.

THE TREND OF MALARIA INFECTION IN THE ARMED FORCES OF THE PHILLIPINES

Gabriel, Alberto I,
Infectious Tropical Disease Consultant, AFP Medical Center & Fort
Bonifacio General Hospital, and Office of the Army Chief Surgeon.

Abstract

In the Philippines, malaria infection remains to be a nationwide public health problem. The endemicity of infection in different regions of the country continuous to be low to moderate, with areas of high transmission. Malaria in the country ranked eight as leading cause of morbidity with a rate of 52/100,000 population (FHSIS-DOH, 2002) and has continuously affected 65 provinces all over the country. The predominant cases of malaria are *Plasmodium falciparum*. While it is true that infection have widely occurred in the country, there are evidences that some strain of plasmodium were imported primarily due to migration of workers and mobility of troops for peacekeeping operations in highly endemic countries. There are various instances that troops serving for "blue beret" contingent bring along with them diseases that may not be present in the country or other strains especially for malaria. Significantly, the malarial treatment regimen remains to be effective in the different regions as well as to new imported cases brought by the migrating countrymen and military troops.

This paper will further discuss the trend as to the incidence among the troops, its clinical manifestations and the effective treatment currently used.

LESSONS LEARNED IN AUSTRALIA FOR INJURY PREVENTION IN THE MILITARY

Rodney Pope, PhD

Charles Sturt University, Koorringal, Australia

Abstract

Injury prevention is an emerging field of research and practice, and lessons learned in one context can prove valuable to others. The Defence Injury Prevention Program (DIPP) has been developed over 16 years, on the basis of research and practice of injury prevention within the Australian Defence Force (ADF), evidence from related fields of research, and lessons learned and communicated by other military forces and civilian groups. The purpose of this presentation is to communicate lessons learned in the ADF context, which are of potential value to practitioners in other contexts.

Key lessons learned include:

1. The importance of command 'buy-in', sound leadership, clear direction, policy-level support and high-level monitoring, as initiative drivers
2. The critical role of robust management structures and local 'champions of the cause', as drivers and sustainers
3. The necessity of participatory approaches, involving key stakeholders at the local level, to gain program acceptance (injury risk management viewed as the 'norm') and to ensure viable strategies to manage risk
4. The need to provide relevant intelligence, in appropriate and concise forms, as well as regular feedback and communication, to commanders and other key stakeholders, in order to enable informed decisions and maintain direction, drive, situational awareness, and enthusiasm.
5. The significance of simplicity, portability, accessibility, utility and user acceptance of key tools, systems and information sources, in order to ensure they are utilised and so achieve results.
6. The door-opening effect of focusing on outcomes of relevance to the respective audiences, for example, 'capability' for ADF commanders, to ensure understanding of program relevance and relative value, and so to ensure program acceptance.
7. The importance of considering all risks and benefits associated with activities, and not just risks of injury, so that injury prevention systems are viewed as organisationally enabling, rather than disabling.
8. Recognition that the organisational change involved in implementing a new program of injury prevention takes time and requires strategic attention to assisting key stakeholders in working through the stages of change in beliefs, attitudes, perceived norms and behaviours.
9. The need to discourage assignment of injury prevention roles to individuals, in relative isolation, and instead encourage participation of a broad range of stakeholders and subject-matter experts, at all levels of the organisation, in order to enhance the sense of 'ownership' and ensure that all relevant perspectives are considered, for sound decision-making.
10. The importance of ensuring that both setting of prevention priorities and selection of preventive interventions are based on sound research or review evidence, which supports importance or efficacy, respectively. Attention to these lessons learned may enhance the effectiveness and efficiency of injury prevention practice in many contexts.

CASUALTIES FROM INSURGENCIES IN THE THREE MOST SOUTHERN PROVINCES OF THAILAND

Cheeranont, Piyapan (Colonel)
Thailand

Abstract

Conflicts between Thai governments and Muslim people in the most southern part of Thailand have started for more than 200 years. Organized groups of Muslim separatists have been set up for more than 90 years and created terrorisms off and on since then. Since January 2004, the violence in the three most southern provinces of Thailand have been markedly increasing, both in frequency and intensity, including shooting, bombing attack and arson. From January 2004 to October 2005, there were more than 2,000 incidents resulting in more than 700 deaths and 1,000 injuries. Most casualties were civilians. Victims who were prone to assassinations were government servants, teachers, policemen, village leaders and Buddhist monks. Risk factors of being assassinated were Muslims who did not join the separatists' intent, one who was alleged as an agent of a security agency or perceived as co-operating with the government, and one who always traveled the same route everyday, early morning and evening time. Most separatist allies were 15-35 year-old male Muslims. From preliminary casualties data analysis, we found that most victims who were injured or died from gun shot wounds had wounds on trunks, so did victims who died from explosions. But most victims who were injured from explosions had wounds on limbs.

INFECTIOUS DISEASES TELECONSULTATIONS FOR OEF/OIF

Susan Fraser, Colonel
U.S. Army, Tripler AMC, Hawaii, United States

Abstract

Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF) led to the deployment of many U.S. military medical personnel. These providers are often faced with complicated or unusual infectious diseases problems that require expert consultation. In 2004, the Army Surgeon General directed the formation of telemedicine consultation services in order to provide expert advice to U.S. military clinicians throughout the world. The Infectious Diseases consultation program was initiated in January 2005. Twentyone Infectious Diseases specialty consultants at Army medical centers in the mainland United States, Hawaii and Germany provided advice to 116 military medical providers over the course of one year. Most of the consults originated in Iraq in support of OIF, Afghanistan in support of OEF, and Pakistan in support of the Earthquake Relief Mission. Several consults originated from other countries throughout the world. The patients included U.S. Army, Marine and Air Force personnel, as well as civilian non-combatants, detainees, military contractors and other patient categories. Providers had the capability of sending images including radiographs and clinical photographs. The average consultant response time was under 5 hours. The most common diagnoses addressed were skin and soft tissue infections caused by oxacillin-resistant *Staphylococcus aureus* (ORSA or MRSA), tuberculosis and latent TB infection, leishmaniasis and malaria. Thirty consults included requests for, or resulted in the initiation of collaborations with other specialty services, including dermatology, pediatrics, burn-trauma and intensive care medicine. This was the largest number of collaborations compared to all the other telemedicine consultative services provided by the Surgeon General's program. Feedback from the providers and consultants was uniformly positive.

This program continues into 2006. The implementation of an Infectious Diseases telemedicine consultation service for the world-wide deployed U.S. military medical providers was both useful and successful. It demonstrates that simple e-mail communications can provide a critical and essential service to military medical providers deployed to countries around the world. This concept can be adopted by other countries with military missions and operations throughout the globe.

MANAGEMENT OF VASCULAR INJURIES IN A FORWARD HOSPITAL

Col KM Rai, SM
Armed Forces Medical Services, India

Abstract

Management of vascular injuries poses a challenging problem, especially under field conditions. Patients often present late, polytrauma is common, and restoration of circulation by arterial repair is not always possible.

Prospective study of patients with vascular injuries, treated over a 25- month period at a forward hospital of Indian Army (Level II Trauma Center). 61 patients with vascular injuries were treated. All patients were male. Age ranged from 19-46 years (mean 28 years). The injuring agent was bullets in 21 patients, splinters in 34, blast injuries in 4, and blunt trauma in 2. Location: There were 3 neck injuries, 4 thoracic injuries, 13 abdominal injuries, and 41 extremity injuries. Associated fractures were present in 15 patients. Repair of vascular injuries was attempted in majority of these patients. Fasciotomy was performed in most cases of extremity arterial injury

There were four deaths (mortality rate 6.5%). The amputation rate was 15% (six out of 41 limb vascular injuries). Limb salvage was achieved in the remaining patients.

Vascular injuries constituted 3.1% of all injuries. Vascular injuries can be successfully repaired in a forward zonal hospital, provided the equipment and expertise is available. Speedy evacuation and early definitive surgery (repair) give better results than ligation. Presence of associated fractures adversely affects limb salvage. Popliteal artery injuries have a relatively poor outcome. Liberal use of fasciotomy is recommended in war injuries.

Session 3D: Nursing in Military I

NURSING - THE INVISIBLE PROFESSION

Beverley Wright, Colonel,
Royal Australian Nursing Corps, Army Defense Health Services Division Branch,
Canberra, Australia

Abstract

I have been a practicing registered nurse for thirty five years with my initial education delivered under the Florence Nightingale system of nursing in Australia. This system of nursing existed for 100 years in my country. In those days doctors lectured nursing students which reinforced the notions of obedience and the subservient role of the registered nurse and it was in the interest of doctors to perpetuate this traditional understanding of the nurse. The mass production of compliant nurses, at little cost ensured the maintenance of the authoritative status of the doctor. Women were segregated into jobs such as nursing, teaching, secretary and hairdressers as examples and nurses, who were mostly women had the dubious honor as the handmaiden to the physician.

Fast forward to the 21st century and has anything changed? Since the late 1980's in my country nursing education is provided by the tertiary sector. More men are entering the profession and women, who still make up a large component of the profession in general, have gained a new level of confidence with regards to their status in the health workforce. For registered nurses this has caused the profession to question perceived traditional roles. A change to the traditional role of the registered nurse as a well educated professional has not been a smooth journey. Both patients and other health care providers still tend to think they know what the profession encompasses. But do they? This paper will briefly examine the current situation of nursing, the silence of voice of the nursing profession and the opportunity for nursing to offer alternatives to the changing health scene.

MILITARY PLANNING AND EVALUATION OF HUMANITARIAN MISSIONS

Steele, Nancy (Major)
United States – Hawaii

Abstract

The U.S. uniformed services has globally engaged in hundreds of medical Humanitarian and Civic Assistance (HCA) missions over the past decade. Most medical HCAs are brief in duration (2-3 weeks including travel) and involve short-term direct patient care rather than long-term developmental projects involving public health or host nation infrastructure. By statute, HCAs are conducted for the operational readiness benefit (ie. training) of U.S. service members, consistent with the political interests of both the United States and the host nation. HCAs are positively viewed by participants and offer great potential for training service personnel as well as host nation representatives. A few of the military training benefits include: providing health care to a large number of people in a short amount of time, exposure to working in unfamiliar austere conditions stimulating some conditions of combat casualty care, and opportunities to treat military relevant diseases not endemic in the United States. Despite these training benefits, minimal information regarding the extensive humanitarian mission experience is obtained and recorded. Although After Action Reports are completed, HCAs are often treated as one-time short term events and the lessons learned for future mission design, planning, and evaluation end when the project is complete. As a consequence, many opportunities to learn from previous projects are lost. Humanitarian assistance is far too complex and the international stakes

too high to be left to a repetitive trial and error process. Although the complexities of HCAs cannot be reflected in simple checklists, there is a benefit to reducing voluminous information to key points useful for successful project design and planning. Thus, it will be the purpose of this presentation to provide information regarding a process which builds evaluation into projects and programs. This process is called the Logical Framework Process and is based on systems theory. This framework has proven useful for a spectrum of humanitarian projects through other agencies. The Logical Framework Process has implications for the military towards successful humanitarian assistance pre-project planning and post-project evaluation.

ROLE OF NURSE IN MILITARY MEDICINE

Col Shobha Sood
Armed Forces Nursing Services, India

Abstract

Irrespective of modern technology and developments in Nursing education effecting practice, we nurses have to preserve our traditional values and adjust ourselves to new developments. The age-old image of a nurse as a caring, human and compassionate person will have to be integrated with the new image of an independent and intelligent professional. Various theorists in Nursing have viewed their focus of nursing practice on the Human / individual, Health, Environment / society and Nursing actions, the military environment with its peculiar exposures to both the healthy and injured populations and their families who are even otherwise undergoing the normal stages of life with its advance aging and degenerative processes. Military nurses possess the expert clinical skills; compassion and leadership qualities required to execute the most challenging tasks in austere environment comprising of Emergency care, Triage, Mass evacuation and integration of Clinical Information systems for care delivery, command and control. Many a time these nurses have to leave their families behind and carry out their functions with uncertainties of their very own existence not only for life but may also at risk of being captured as prisoners of war and compelled to work in the enemy territories. Their role during war and in peace is highly appreciable and based on well defined & organized body of knowledge. Team work and collaboration are the hallmarks for providing need based care in the best interest of the patients and in the long run for their families and the broad society.

PREPARING NEW MILITARY NURSES FOR DEPLOYMENTS TO MILITARY OPERATIONS IN IRAQ AND AFGHANISTAN

Arthur Wallace, Colonel
U.S. Army, Tripler AMC, Hawaii, United States

Abstract

Over the past several years, young company grade Army nurses returning from 6-12 month deployments in Iraq and Afghanistan have provided extensive feedback on the skills and training that should have been provided prior to their deployment. While exposure to trauma and critical care nursing competencies was expected, most nurses did not anticipate the large number of women and children treated in combat support hospitals as part of the military's humanitarian outreach. Our proposed training strategy includes training our second lieutenant "new" nurses in a first year "rotation" of competencies in medical, surgical, intensive care, labor & delivery, pediatrics, and emergency room. It is a pilot program that is designed to instill a level of confidence and competency prior to a tasked deployment. As we move forward to a Joint Military Medical Command environment, it is critical that nursing interoperability with our sister services in areas of operations include similar deployment preparation.

U.S. MILITARY DENTAL ASSISTANCE PROGRAM IN MADAGASCAR

Charles Craft, Captain
U.S. Air Force, Phnom Penh, Cambodia

Abstract

In 2005, the Headquarters of the US Pacific Air Force, International Health Affairs Division Hawaii, conducted a Dental and Public Health Exchange Program with the country of Madagascar. The purpose of this joint service mission was to enhance interoperability between the Malagasy Army, the Madagascar Ministry of Health, the Madagascar Dental University and the United States Military Medical System. The dental mission team consisted of: 12 Malagasy Army dentists and assistants, 30 University dental students, several local village health workers, two US Army Oral Surgeons and one US Public Health Dentist. This team first held a three day dental surgery workshop at Madagascar's only dental University. Over 100 students were taught advanced emergency and implant surgical techniques, public health and preventive dentistry procedures and infection control guidelines. The team then transported portable equipment, instruments and supplies to two remote village locations within Mahajunga province. Here they set up field clinics and provided emergency humanitarian dental services to over 250 rural patients. By utilizing local translators and following proper cultural protocols, they quickly formed a professional and effective international health team. Anonymous evaluation forms were used to obtain patient and participant feedback observations. This mission was highly successful in offering urgent patient care to an underserved population and provided educational and material assistance that supported the existing health care system in Mahajunga. It also helped to further the goodwill relationship that exists between the countries of Madagascar and the United States.

MANAGEMENT OF CRANIOFACIAL INJURIES: A TEAM APPROACH

Col GK Thapliyal
Armed Forces Dental Services, India

Abstract

Following World War II and during the ensuing decades, combined injuries of the cranium and face were treated in a different manner than they are today. The surgical repair was primarily directed towards the management of the Central Nervous System while, defects in forehead contour were repaired as secondary and tertiary procedures. Once life support systems have been established and the initial general examination has been completed, attention is directed to the identification and management of Cranio-facial injury. When possible, the Maxillofacial and cranial repairs are accomplished at the time of neurosurgical exploration. The neurosurgical procedures are accomplished, then the fracture of the skull and facial skeleton are reduced. The management of a concomitant frontal sinus injury is still controversial but remains a key element in the correct management of these injuries. The paper emphasises upon the fact that management of cranio-facial injury requires a synthesis of neurosurgical techniques and technique derived from Maxillofacial surgery that have been successfully applied to the treatment of complex facial injuries.

RECONSTRUCTION OF ORAL/MANDIBULAR DEFECTS

Major Joseph C. Snizek

ENT Service, Department of Surgery, TAMC, United States – Hawaii

Abstract

The goals of mandible reconstruction after traumatic or post-extirpation defects are to provide a watertight closure, allow adequate mastication, and provide for a pleasant external cosmesis. The nature of the injury most often determines the optimal reconstructive modality with soft tissue flaps occasionally being necessary to achieve watertight closures. In reconstructing the mandible, if post-operative radiation therapy will not be required, free bone grafts and trays generally provide adequate reconstruction. When post-operative radiation is necessary, complex bony and soft tissue defects are present, or the anterior mandible is involved, microvascular free tissue transfer is required for optimal reconstruction. An algorithm for mandibular reconstruction will be presented along with an in-depth discussion of microvascular free tissue transfer techniques.

INJURY PATTERNS AND MANAGEMENT OF MAXILLOFACIAL GUN SHOT WOUNDS & BLAST INJURIES- A 10 YEAR EXPERIENCE

Col S Karkun & Lt Col SK Roy Chowdhury

Armed Forces Dental Services, India

Abstract

Since the discovery of Gun powder the human mind activated through the ages for development of varied nature of ballistic wounds. Loss of life limb and gross injuries. Various specialties are called to save many a life and limb. The facial wounds often are very aggressive and deformed in nature. Maxillofacial surgeons play an important role in stabilization and rehabilitation of different types of Gun shot wounds/Blast injuries/ballistic injuries involving the Craniofacial region. In timely care and resuscitation the functional and aesthetic recovery of such cases may provide desired results. Both civil and military aggression in the past involved the clinicians in management of wide range of facio maxillary injuries. The outcome of such incidences has resulted in active biological research for improvement of techniques and materials.

The country is experiencing low grade war like situation and counter Insurgency operations for the last two decades involving a wide range of sectors. Direct involvement as a maxillofacial surgeon has been profound and violent between the period 1995-2005. A large number of cases, approximately 550 cases of varied methods of soft/hard tissue trauma were attended to. Various modalities of treatment were followed for management of moderate to severe ballistic injuries. Extensive use of low carbon indigenous, monocortical, non compression, AISI 316 stainless steel, mini plates were used for rigid fixation of the facial bone injuries. This protocol was replaced since 1997 with application of bio compatible corrosion proof, non toxic, high strength light weight pure titanium micro/mini plating system for rigid internal fixation. To maintain continuity of large osseous bone defects mandibular titanium reconstruction/trauma plates were used. In certain situation distraction Histogenesis was applied for improved aesthetics and functions as tertiary care as a modality of treatment.

Overall 550 cases of maxillofacial ballistic injuries were managed during the period. Out of these cases medical statistics suggests 60% as excellent functional/ aesthetic results. Approx 25% showed moderate degree of recovery involving soft and hard tissue injuries of region. 15% case were identified as complication of varied nature affecting soft/hard tissue defects due to composite injuries. These

cases were later managed by reconstruction plate/distractor histiogenesis as a part of tertiary care. All cases were observed between 06 months-18 months.

The devastating effects of weapons in various human conflicts since the days of use of gunpowder to the modern times may be mild to extremely severe. Automated machines are severe enough to pose a challenge to the clinicians for management of such injuries. However in timely resuscitation primary care of the vital organs and care of soft/hard tissue can be very satisfying for the craniofacial wounds for functional/aesthetic point of view.

DENGUE FEVER/DENGUE HAEMORRHAGIC FEVER IN INDIA THROUGH AEDES ALBOPICTUS (SKUSE) - ASIAN TIGER MOSQUITO, WITH SPECIAL REFERENCE TO KERALA STATE

Dr BK Tyagi, Ph.D

Center for Research In Medical Entomology (ICMR), India

Abstract

Dengue Fever (DF) and Dengue Hemorrhagic Fever (DHF), mainly transmitted by *Aedes* mosquitoes, is regarded as the fastest emerging and most dangerous mosquito-borne disease of the millennium. South-east Asia is particularly affected due to cyclic epidemics of DF/DHF in several countries, including India, where thousands of people fall sick and many die annually. The disease is particularly severe in areas with low immunity as well as to the travelers including armed personnel frequenting areas with known DEV infested areas.

In India, several States have so far reported DF/DHF transmitted mainly by the vector, *Aedes aegypti*. In Kerala in south India, however, the dengue transmission dynamics varies a great deal as the disease vector is *Ae. albopictus* - the Asian Tiger mosquito, notoriously known for transmitting over a dozen arboviral infections in USA alone. Interestingly, DF having first struck in 1997 in Kottayam district has been regularly striking Kerala state in epidemic proportion with heavy morbidity and mortality since 2001. Both the vectors, *Aedes albopictus* and *Ae. aegypti*, occur in Kerala, albeit the predominance of the former in all the three major physiographic zones in the State. Climatically Kerala has undergone a catastrophic change, due mainly to anthropogenic activities, in its ecology during past three decades driving *Ae. albopictus* out from its natural habitat to breed in and around human settlements in the proximity to forests. At the same time new agricultural practices to generate higher revenue through extensive rubber, pineapple and cocoa plantations - which all have rendered a new and extensive breeding habitat to *Ae. albopictus* in Kerala, have only prolifically added to man-mosquito interaction. Extensive entomological, serological and virological investigations made in Kerala State between 2001 and 2005 have revealed that, of the 26 species recorded, *Aedes aegypti* (4.4%) is restricted principally to coastal urban areas, while *Ae. albopictus* (69.7%) is the most dominant species, followed by *Armigeres subalbatus* (20.7%).

There is strong evidence that *Ae. albopictus* has spread out from its original sylvan rural habitat to coastal urban conditions, and in the process, eroded the established breeding domains of *Ae. aegypti* in the low-lying coastal cities. While *Ae. albopictus* is seen gradually displacing *Ae. aegypti* in urban areas (such as in Ernakulam/Cochin - an army stronghold - and Thiruvananthapuram along coastline), reverse is encountered in the rural sylvan areas (such as Kottayam and Idukki at high altitudes). *Aedes albopictus* is 100% outdoors in rural areas but is often encountered indoors as well with or without *Ae. aegypti* in the coastal urban environs. Several pools of female *Aedes albopictus* have been naturally incriminated with the dengue-2 virus in Kerala, but not any of *Ae. aegypti* so far. *Aedes albopictus* has also been found to maintain DEV through transovarial mode between epidemics, a phenomenon which further adds to its potential for dengue transmission during unfavourable ecological conditions.

CHARACTERIZATION OF DENGUE CASES PRESENTING TO A TERTIARY MEDICAL CENTER IN METRO MANILA, PHILIPPINES

Jarman, Richard (Captain)
United States – Thailand

Abstract

Dengue is a global health concern and is a major cause of morbidity for both endemic populations in Asia as well as military forces operating within the Asian theater. Public health officials and military planners require seroepidemiologic data in order to assess the appropriateness of vector control and to further qualify the Philippines to host potential future dengue vaccine testing sites. Due to the current paucity of dengue data for the Philippines stemming from lack of national dengue diagnostic capabilities, we initiated a cross-sectional, hospital-based, passive surveillance study to evaluate male and female patients, 2 years of age or older, admitted with dengue-like syndrome (DLS) to San Lazaro Hospital, a 400-year old, tertiary, infectious disease hospital catering to Metro Manila. Laboratory characterization of each case was based on a dengue IgM/IgG ELISA on acute and convalescent sera for serologic confirmation of each case, as well as the dengue polymerase chain reaction (PCR) for serotype determination when possible. The accuracy of clinical diagnosis based on the World Health Organization (WHO) criteria was determined using confirmatory laboratory testing as the gold standard. We will present here the first 100 cases of DLS: the circulating serotypes, clinical manifestations and prognostic factors for disease outcome using logistic regression.

DENGUE SURVEILLANCE IN VIETNAM: VIETNAM PEOPLE'S ARMY - AUSTRALIAN DEFENCE FORCE DENGUE PROJECT

Sr Colonel Nguyen Xuan Thanh

Vietnamese People's Army; John Aaskov, Major, Australian Army, Australian Army Malaria
Institute, Brisbane, Australia

Abstract

Dengue is a mosquito-borne disease caused by four serotypes of a virus of the same name. It is a major cause of morbidity and mortality in tropical countries and has been a significant cause of non-battle casualties in military operations since the beginning of the Second World War. However, the true burden of this disease and the efficacy of measures to control it have rarely been quantified because of the scarcity of comprehensive laboratory diagnostic facilities. The Vietnam-Australia Defence Dengue Project has established a central hub in the Military Institute of Hygiene and Epidemiology in Hanoi and an initial three-study site in Da Nang, Nha Trang and Can Tho. Case definitions, appropriate to the localities, have been developed and staff at all sites trained to perform routine dengue diagnostic serology. A basic Quality Assurance program also has been implemented. Preliminary programmes for surveillance of mosquito vectors of dengue virus also have begun. Initial results confirmed that many patients clinically-diagnosed as having dengue do not have this disease and that the accuracy of clinical diagnoses of dengue is greatest during outbreaks. The results also suggested that there is a significant difference in the incidence of dengue between the south and the central coast of Vietnam. Furthermore, primary dengue infections in adults who have been long-term residents of southern Vietnam suggest that there may be significant variations in the incidence of disease even in areas

regarded as hyper-endemic for this disease. Studies in progress will identify the serotype and genotype of the dengue viruses being transmitted in these study areas. Additional study sites will be included in the programme as the existing ones become fully operational.

POTENTIAL NEW INSECT/ARTHROPOD REPELLENTS FOR PERSONAL PROTECTION AGAINST INFECTIOUS DISEASE VECTORS

Raj Gupta, Colonel
U.S. Army, Fort Detrick, , United States

Abstract

Arthropod-borne diseases are rather extensive, but few effective economical countermeasures are currently available. Use of inexpensive and practical insect repellents are more viable and attractive countermeasures to prevent loss of combat effectiveness. N,N-diethyl-m-toluamide (DEET) has been regarded as the standard mosquito repellent for the past several decades. However, as a repellent for human use, DEET is not equally effective against all insects and arthropod vectors of disease. Moreover, it has a short duration of action, has several disagreeable cosmetic effects such as unpleasant odor, deeper skin penetration causing drug-drug interactions leading to potential toxicity in children and adults when used in higher concentrations. In addition, DEET is a plasticizer that reacts with certain plastics and synthetic rubber. Thus, a more effective nontoxic insect repellent, which demonstrates appropriate wear-resistance, efficacy and extended protection is needed for protection against insect/arthropod-borne diseases. In pursuit for a better understanding of insect repellent property of molecules, we have generated a three-dimensional pharmacophore model using 3D-Catalyst from a training set of eleven diverse insect repellent compounds including DEET. Protection time data for repellent activity of the training set were taken from an earlier published study. Three hydrophobic sites and a hydrogen-bond acceptor site in the molecule appear to be critical for potent insect repellent activity. Calculated stereoelectronic properties such as molecular electrostatic potentials on DEET and some of these molecules in the training set are consistent with our observation. The pharmacophore shows a fairly good correlation (correlation=0.9) between protection time afforded by the compounds in the training set and their predicted protection time. We evaluated ten new custom synthesized compounds based on our in silico 3D pharmacophore model for repellency against *Aedes aegypti* using the in-vitro test system. Seven of these new compounds showed good repellency with ED₅₀ values ranging from 0.001575 mg/cm² to 0.102891 mg/cm² and ED₉₅ ranged from 0.614490 mg/cm² to 1.203814 mg/cm², respectively. The new compounds are being further explored for their potential repellent activity.

ORTHOPAEDIC MORBIDITY OF THE CURRENT WAR ON TERRORISM: U.S. PERSPECTIVE

Benjamin Kam, Jr., Major
U.S. Air Force, Yokota, Japan

Abstract

Since March of 2003, more than 16,000 US troops are listed as wounded in action from Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The volume of orthopaedic extremity injuries exacts a heavy burden on our young soldiers. Forward deployed medical assets and the reality of a timely aeromedical evacuation system has made state-of-the-art traumatology available to the common soldier. With these advances we are realizing a generation of young men and women who will need ongoing medical and ancillary services. These services may include reconstructive surgery, prosthetic fitting, employment retraining, and psychosocial services. The full extent of this socioeconomic burden has yet to be realized.

SATISFACTION OF MOBILE MILITARY MEDICAL SERVICE IN THE SOUTHERN PART OF THAILAND

Emwattana, Pramote (Colonel)
Thailand

Abstract

The Royal Thai Army Medical Department has established medical units for servicing civilians in the 3 southern provinces, consisting of 6 medical doctors, 3 dentists, 6 nurses, 12 medics, and 3 dental medics, equipped with out-patient unit, minor surgical unit, mobile x-ray, mobile dental clinic, and ambulances starting from December 1, 2005. The services are aimed to earn public satisfaction and trusts on government officers, in order to gain anti-terrorism supports. The outcomes of 19 missions led to 96.7% overall satisfaction of 4,348 outpatients, 566 dental services, 122 minor surgeries, 182 x-rays, and 161 laboratory examinations. Attitude survey reflected 78.3% have trusts on officers' government and require frequent mobile visit to the local areas.

THE DEPLOYMENT EXPERIENCE: UNDER CONSTRUCTION

Pavlesich, Rudolph (Captain)
United States - Hawaii

Abstract

As the need for nurses to deploy around the globe increases, the Army faces its own unique problem of supplying nurses to military hospitals around the U.S. and supporting troops in various theaters of operation. A literature review revealed a scant amount of information about the junior officer deployment experience. Therefore, the purpose of this presentation is to explore common perceptions of junior officer deployments and make recommendations for more effective deployments. The deployment

experiences of the Army Nurse Corps Junior Officer were examined, from the selection process and transition into theater, to the command climate and availability of support from the perspective of three junior Army Nurse Corps Officers. Deployment experiences were compared and contrasted to discover specific themes; the themes were used to describe the findings. Recommendations for key leaders will be presented. Three junior Army Nurse Corps officers with greater than two years combined deployed experience comprised the sample. While deployed in support of OIF I, II, and III, these officers were assigned to the 101st 426 Forward Support Battalion, the 31st and 67th Combat Support Hospitals, and the 332nd Air Force hospital with clinical assignments as the OIC of Patient Hold and as a staff nurse and Head Nurse of the Intensive Care Unit. During the deployment, the three junior officers comprising the sample experienced augmenting a unit in mid-tour, being left behind as a follow-on contingent to supplement another CSH in theater, as well as work jointly with the Air Force and Australian Nurse Corps. Junior officers do not fully understand the PROFIS system and how it works; there is a need for clarification of the PROFIS system, its intended action, and results. Through discussion it was determined that the expectations of junior officers and those of the gaining units differed widely in terms of job description, performance, level of experience, and readiness of the soldier to perform in an austere environment. Also noted was the difference in leadership between the branches of service. A lack of support was noted from leadership in theater as well as garrison leadership. These themes recurred throughout each participating junior officer's deployed experience. There is a need for improvement in the deployment process and support of the deployed AMEDD soldier. In order to positively impact the lives of deployed soldiers, junior officers and leadership need a better understanding of: 1) mechanisms to successfully ease transition from TDA to TOE units; 2) the PROFIS system; 3) PROFIS-specific issues; and 4) the types of support that are beneficial to a PROFIS'd soldier. Key leaders can positively impact the lives of their junior officers and thus recruitment and retention of AMEDD personnel. Implications for nurse administrators, clinicians, educators and researchers, as well as Army Medical Department leadership will be presented.

RECENT DEVELOPMENTS IN FIELD POTABLE WATER SUPPLY

Burrows, William (Dr.)
United States

Abstract

Since the development of field-mobile reverse osmosis systems and other membrane technologies for potable water production in the 1980s, primary water supply sources for deployed forces have been surface freshwater, brackish water and seawater. Evolving military operational tactics, techniques and procedures have created a need for less traditional supplies, and recent efforts by the U.S. Army Tank Automotive Research, Development and Engineering Center will exploit nontraditional sources, such as water extracted from vehicle exhaust systems and from ambient air. Additionally, pickup water, available to individual soldiers or small units isolated from the bulk military distribution system, is receiving renewed attention by reason of aggressive commercial marketing of individual water purifiers of varying and sometimes uncertain capabilities. Traditional procedures for distribution of potable water have also succumbed to changing mission requirements and responded with the development of systems for garrison and far-forward packaging of field bulk water supplies. These developments have created the need for greatly enhanced attention to water quality issues, and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) is active in a broad range of activities, including collaboration with National Sanitation Foundation International to publish a protocol for testing individual water purifiers. Similar efforts will address water from air and other emerging technologies. The USACHPPM is also supporting the Edgewood Chemical Biological Center and other organizations in development of portable analytical devices for rapid monitoring of field water supplies for chemical, radiological and microbiological contamination. These efforts parallel actions by the NATO community, with USACHPPM participation, to update short-term emergency and longer-term operational field water standards.

DETECTING BIOTHREATS THROUGH IMMUNE SYSTEM GENE EXPRESSION RESPONSES POST EXPOSURE: APPLICATION OF MATHEMATICAL MODELS TO IDENTIFY UNIQUE SIGNATURE PATTERNS

Jett, Marti (Dr.)
United States

Abstract

Biothreat pathogens elicit remarkably similar symptoms during early stages and would not be readily distinguished from common malaise and flu-like illness, yet it is during this early, non-descript, phase that treatments would be most effective. At these early stages, proliferation of pathogen may not reach detectable levels in body fluids, and furthermore, some pathogenic agents are sequestered in tissues within a few hours post exposure. Therefore, an alternative approach is to characterize host responses, an approach that offers other benefits that include assessment of “progression of illness.” This can take into account not only time post-exposure, but also exposure level and susceptibility due to personal factors. Our studies have characterized host gene expression responses to biological threat pathogenic agents as well as to common influenza and other flu-like pathogens in order to create a library of gene response patterns typical of these pathogenic agents. We have undertaken studies to correlate the clinical and pathological findings with host gene expression, at post-exposure time periods from 2-72 h, developing algorithms to correlate these massive datasets with the progression of illness. Mathematical modeling techniques (www.biospice.org) have provided a means to organize the gene expression responses functionally and sort responses to identify specific markers that have the potential to reveal new stage-appropriate therapeutic strategies.

BIO TERRORISM

Brig A Nagendra
Armed Forces Medical Services, India

Abstract

Biological Warfare and Bio-terrorism are the intentional or the alleged use of viruses, bacteria, fungi or their toxins to produce death or disease in humans, animals or plants. Bio-terrorism is a low intensity warfare directed at causing loss of morale or economic loss or to subjugate the government into submission to the demands of the terrorists.

Biological agents are easy to acquire, synthesize and use and are difficult to detect or protect against. The top four agents likely to be used are smallpox, plague, anthrax and botulism, the threat that bio-terrorism will be used on military forces and civilian population is now more likely than at any point in all of history.

In India there is no proof as yet of a bio-terrorist attack. However, many outbreaks of infectious diseases have been poorly investigated and dismissed as ‘newer’ and emerging infections or as natural calamities. Deterrence will not work against terrorists. A good intelligence network will enable us to

be prepared for a possible attack. Surveillance of unusual diseases of unusual clinical presentations will alert us on the possible bio-terrorist scenario. Quarantine, medical management, collection of appropriate patients' samples and efforts to characterize the BW agent through a well established Laboratory network at State, National and International are essential components of our response to the BW attack. Administrative actions include a good IT network, liaison among the various agencies such as civil police, Intelligence and military authorities and a good Public Health Network.

MILITARY HEALTHCARE AND PUBLIC WATER SYSTEM VULNERABILITIES

Temkar, Prakash (Dr.)
United States – Japan

Abstract

Military healthcare professionals play a vital role in diagnosing, responding, and successful recovery from public water system emergencies due to natural disasters or terrorist attacks. Potential vulnerabilities of water supply systems to terrorist threats range from structural damage to water system infrastructure to cyber attacks on supervisory control and security systems to deliberate contamination of water at the supply intake, treatment facility, and within a distribution system. Although the United States Army water systems are more physically secure than ever before with multiple layers of enhanced protection, there are several potential points of contamination that could be targeted for acts of water terrorism. It is important for military healthcare providers to have a basic understanding of these system vulnerabilities in order to be able to complete an accurate exposure history when evaluating a suspected case of terrorism-related disease in their clinical practice. In addition, as a result of heightened public awareness regarding the potential for additional terrorist activity, physicians and other healthcare providers will be required to play a leading role in risk communication with the public, if an act of waterborne terrorism occurs. The Environmental Health Engineering Division of the U.S. Army Center for Health Promotion and Preventive Medicine-Pacific (USACHPPM-PAC) has conducted water system vulnerability assessments and prepared emergency response plans to enhance drinking water safety at Army water systems throughout the Pacific Theater including Hawaii, Japan, and Korea. Lessons learned from these assessments clearly indicate that a coordinated and effective response to acts of water terrorism will depend upon cooperation among a multidisciplinary team of healthcare providers, public health and water utility practitioners, law enforcement professionals and community leaders in order to mitigate the potential impact of an intentional contamination event. This presentation will focus on water system emergencies faced by the U. S. military at home and abroad, describe unique lessons learned by military water systems while developing the emergency response plans, and discuss lessons learned from several water emergency table top exercises conducted by the USACHPPM. Information provided during this presentation will be useful to military healthcare professionals including clinicians, administrators and preventive medicine personnel.

FOOD VULNERABILITY ASSESSMENT

Mark Chappell, Captain
U.S. Army, Fort Shafter, Hawaii, United States

Abstract

In the past few years, the emphasis for maintaining security has dramatically increased. Many

different areas of risk are addressed with large amounts of resources and money used to assess and minimize these risks. Although food is a basic necessity to the individual and mission, addressing the risks involved with food procurement, storage and service are many times minimized or downplayed in support of other more critical areas. Throughout history, the contamination of food has served as a means to impede, demoralize, promote political agendas and even defeat an adversary. Modern examples serve to demonstrate this. The US Army Veterinary Corp plays an important role in maintaining a safe, wholesome food supply for the US military through the auditing of suppliers including security screening, inspection of food destined for ships, evaluation of Ready to Eat Rations, and, support of the Installation Preventive Medicine Mission. Another function involves assisting the Commander of an Installation, whether CONUS or OCONUS, in conducting Food Vulnerability Assessments. Several regulations require US Installation Commanders to perform these assessments. Veterinarians serve as a member of the team, established by the Commander, providing consultation on food borne security risks.

The US Army TG 188, US Army Food and Water Vulnerability Assessment Guide, is a Risk Management guide utilized by the Installation Commander to form an assessment team, conduct an assessment of their food procurement and storage system and develop ways to lessen the identified risks. Planning and communication are paramount to a successful assessment. The process is based off basic risk management processes and includes 6 steps. Step 1 involves identifying the hazards through a systematic evaluation of the procurement, transportation and storage system. Step 2 involves thoroughly assessing the hazards including evaluation of the hazard probability and severity as well as characterizing the risk. Step 3 involves developing controls to minimize the risks and making risk decisions. Step 4 involves implementing controls to minimize the risk. Step 5 involves supervising and evaluating the measures taken to minimize the risks and establishing ways to continually monitor for new or missed threats. Step 6 involves communicating the food risks accurately, objectively and clearly in a credible manner. There are steps that maybe taken to facilitate the assessment and those to avoid. Cooperation within the team and a definitive Command and Control are vital to success. Scenarios exist in such areas as transportation and the procurement system itself that demonstrate the importance of evaluating food security. Regardless of the way the assessment is conducted, finding the areas in the food chain at risk and closing them are paramount to maintaining security.

MILITARY SUPPORT FOR DISASTER RESPONSE

Connell, Larry (Lieutenant Colonel)
United States – Hawaii

Abstract

This briefing will give the audience a first hand account, from the eyes of the senior Medical planner on the CSF 536 (Unified Assistance) staff, of the operational planning, execution, and lessons learned in providing relief to Tsunami stricken South East Asia. This briefing is not designed to detail on any of the clinical aspects of the relief efforts i.e. disease rates, types of injuries, number of patients etc. Rather, this brief is designed to give the audience insight into “how” to provide relief during a disaster event, and many of the challenges.. Topics covered will include: establishing medical requirements, Political impacts, the importance of accurate assessments, building a coalition, the Multi-National Planning and Augmentation Team (MPAT), as well as other operational considerations.

PLAYING OUR PART: ROYAL AUSTRALIAN AIR FORCE HEALTH SERVICES RESPONSE TO MASS DISASTERS IN ASIA

Smart, Tracy (Group Captain)
Australia

Abstract

2005 was a stellar year for the Royal Australian Air Force (RAAF) health services. As well as providing support to a number of ongoing military operations around the world, RAAF health personnel responded to disasters. in Sumatra following the 26 Dec 04 Tsunami, the island of Nias following the March 05 earthquake, Bali following the bombings in October 2005, and Pakistan following the earthquake in October 2005. Real time experiences such as these have assisted in the RAAF Health Services Wing refine and enhance its operational health capability, particularly in areas such as rapid deployment of health facilities, carriage of critically injured patients and specific humanitarian health issues. These experiences have also highlighted the importance of developing closer working relationships with militaries and other government agencies to improve the efficiency and effectiveness of response to both natural and man-made disasters. Regional cooperation in a mass disaster situation is essential for all nations including Australia as we never know where disaster might next strike. This paper explores the role that the Australian Defence Force and RAAF health services in particular may have in disaster response in our region and suggests methods to further improve regional response.

THE GOAL FOR THE MEDICAL SUPPORT OF OVERSEAS DISASTER RELIEF ACTIONS BY JAPAN GROUND SELF DEFENSE FORCE

Ikegami, Shusei (Lieutenant Colonel)
Japan

Abstract

We Japan Ground Self Defense Force (JGSDF) have participated 10 overseas operations including UN-PKO since 1992. We experienced three international disaster relief actions with medical support

and the significance of these activities are getting increased year by year. Therefore, we introduce some of these activities and propose the problem orientation for overseas operation of JGSDF.

Case 1: Rwandan Refugees Relief Task Force (1994.9~12). JGSDF joined this operation with Japan Air Self Defense Force (JASDF). This operation included medical support, prevention of epidemics and water supply service. The medical team with nine doctors engaged the local hospital near Camp Goma and managed primary health centers. Seventy-two (72) cases of surgery had been performed in this hospital. They also made technical support and guidance of the laboratory examination for malaria to the local staffs. They also took preventive measures against epidemics.

Case 2: Japan Medical Support Unit for Honduras (1998.11~12). We dispatched JMSU with JASDF to Honduras damaged with huge Hurricane Mitty in 1998 within two weeks. The medical unit with seven doctors managed a field hospital. They treated more than 4,000 outpatients. They also performed the prevention of epidemics for large area in capital city.

Case 3: Ground Self Defense Force Disaster Relief for Indonesia (2005.1~3). We managed this operation within ten days after Tsunami with Sumatra earthquake in Indonesia. We made joint operation with JMSDF and JASDF. Eight doctors joined this operation and performed consultation more than 6,000 patients and 2,300 children for vaccination. The team also made to manage the mosquito-control activities for large area in Banda Aceh.

We got important lessons from these operations:

- (1) Primary first action agreement with host nations,
- (2) The working period,
- (3) Civil-military cooperation,
- (4) The preparation for kinds of disaster. These are important subjects to complete the mission successfully.

DISASTER MEDICAL MANAGEMENT DURING FLASH FLOODS: MUMBAI 7/26

Wg Cdr KJS Makker, Wg Cdr D Malik
Armed Forces Medical Services, India

Abstract

Mumbai saw unprecedented flash floods on 26 Jul 2005. It was a collective event of cloudburst, raining 933 mm in just 24 hours (equivalent to two monsoons in Central India), compounded by a 4.5 meter high tide at the same time. The resultant flash floods inundated majority of Mumbai with water rising upto 15 feet in some areas in Central Mumbai. People caught unawares had to spend the night on the roads wading through waist and neck deep water. The state machinery and the disaster management plan were thrown out of gear because of the magnitude and suddenness of the catastrophe. Air Force Units in Mumbai and suburbs also suffered, with one of the units being submerged in 10 feet water for 2 days. Innovative health measures like emptying the sumps by using FTPs, concerted anti-malaria and anti-epidemic measures were taken by the Officiating SMOs and the team. Chemoprophylaxis for Leptospirosis was timely given leading to nil reporting of any case of the rare disease. The above-mentioned aspects supported by aerial photographs and newspaper-cutting illustrations have been brought out in this presentation meant as an educative talk for all health care personnel of the armed forces.

Session 6 P3 : HIV AIDS

HIV AIDS PREVENTION AND CONTROL PROGRAMME IN INDIAN ARMED FORCES

Col AK Verma, Brig Mandeep Singh, Wg Cdr R Vaidya, Lt Col A Kotwal, SM
Armed Forces Medical Services. India

Abstract

HIV AIDS has acquired proportions of a global threat to humanity and the whole world perceives the disease as a major health and developmental challenge and serious socio-economic concern. HIV/AIDS situation in India is no longer confined to high-risk groups alone but has penetrated into the general population. Indian Armed Forces being an integral part of the society is also not spared.

Indian Armed Forces is among the pioneers to institute and implement the HIV/AIDS Control Organisation at AFMC, Pune under the aegis of Director General Armed Forces Medical Services in the year 1992.

Information, Education and Communication (IEC) activities being the back bone of the prevention programme, 92 IEC nodes have been established all over the country to spread the awareness regarding the disease.

Immunodeficiency centers have been established to provide comprehensive management for HIV/AIDS cases. Anti Retroviral Therapy (ART) is administered to personnel and their families at these centers as per WHO criteria.

All ante-natal cases are tested for HIV after due pre test counseling. Spouse and the siblings of HIV positives are also tested and followed up. Nevirapine is instituted as a part of Prevention of Parent to Child Transmission (PPTCT).

Post-Exposure Prophylaxis (PEP) following, exposure to needle stick injury, blood and body fluids from a known HIV positive individual and establishment of Voluntary Counseling and Testing Centers (VCTCs) are other integral components of HIV prevention in Armed Forces.

Every effort is made to retain HIV positives in the services and to avoid stigma and discrimination. As a result of total dedication and involvement of one and all in Armed Forces, it has been possible to stem the incidence of HIV infection in the services.

HIV VACCINE TRIALS IN THE MILITARY

Major General Eric Shoomaker
Commander, Medical Research and Materiel Command

Abstract

THAILAND REFOCUSSES ON HIV/AIDS PREVENTION

Major General Suebpong Sangkharomya
Commander, AFRIMS-Thailand

Abstract

THE INDIAN ARMY EXPERIENCE WITH HIGHLY ACTIVE ANTIRETROVIRAL THERAPY AT BASE HOSPITAL, DELHI CANTT

Col LR Sharma, VSM, Col RG Poduval, Col RS Chatterjee,
Armed Forces Medical Services, India

Abstract

Since antiretroviral therapy has recently become available in the Indian Armed Forces, there is a need to create a comprehensive clinical database and study the clinical profile of HIV disease progression and assess the efficacy of highly active antiretroviral therapy among soldiers afflicted with HIV/AIDS. We report the outcome of 785 patients. The study has aimed to acquire comprehensive clinical data over an extended observational period and to assess the efficacy of HAART & identify factors influencing treatment response.

The data was obtained by consecutive enrollment of HIV infected soldiers from May 2004 to Dec 2005. Clinical parameters for all were collected initially and during a six month review. HAART efficacy was determined by clinical improvement, fresh opportunistic infections and CD4T cell response. All were male adults. Mean age at presentation was 30 yrs. 80% of soldiers were in the age group of 26 to 40 yrs. 55% were married, 45% were unmarried. Reasons for detection: blood donation (12%), STD (17%), Herpes Zoster (21%), tuberculosis (9%). 385 cases (49%) qualified for HAART. At enrollment the median CD4T cell count was 163 cmm. The increase in CD4T cell count was 46 per cmm at the time of 6 months and 70 per cmm at 12 months. Toxic effects limiting treatment occurred in 15 cases (4%). Soldiers were able to tolerate antiretroviral drugs fairly well. One case had Nevirapine induced rash. Five cases developed Zidovudine induced anemia and two cases had Lamivudine and Stavudine induced neuropathy. 01 case had drug induced hepatitis. 95% of soldiers who have completed more than one year HAART are alive. 38 patients died during follow up.

The overall survival trends and reduction in opportunistic infections provide evidence in support of further efforts to enlarge the armamentarium of antiretrovirals for the armed forces. The study has limitations and the findings are preliminary. Further studies with virological assay as predictor of treatment response are recommended.

HIV/AIDS IN THE MILITARY: LESSONS LEARNT IN PREVENTION, CARE, TREATMENT AND SUPPORT - NAMIBIAN EXPERIENCE

Major Mariane Muvangua
Namibia, Africa

Abstract

HIV/AIDS: KNOWLEDGE, ATTITUDE, PRACTICE, AND BEHAVIOR OF NEW RECRUITS

Colonel Lam Quoc Hung
Vietnam

Abstract

EMERGENCIES IN HIV INFECTIONS IN LARGETERTIARY CARE TEACHING HOSPITAL OF THE INDIAN ARMED FORCES

Lt Col Shanmuganandan K, Brig G Ramdas VSM, Lt Col PP RAO
Wg Cdr Sashindran V
Armed Forces Medical Services, India

Introduction: HIV infection is a chronic infection with protean manifestations which is invariably fatal if left untreated, The manifestations of the disease are protean. A number of emergent situations arise in the course of the illness. It ranges from clinical emergencies like opportunistic infections, adverse effects of medications, psychiatric emergencies on one hand to social and administrative emergencies like post exposure prophylaxis and stigma related emergencies on the other hand

Patients and methods: This study was conducted in a 1000 bedded tertiary care teaching service hospital in the immunodeficiency center. Details of various emergencies encountered over a period of 28 months from May 2003 to Aug 2005 are described.

Results: The emergencies encountered are tabulated according to the type of emergency and the organ system involved. The outcome of these emergencies depended upon the stage of HIV infection, severity of opportunistic infection and comorbid conditions

Conclusion: A wide variety of emergent situations arise in the course of HIV infections which may be clinical or non clinical; overt or subtle; life threatening or organ threatening. An astute watch and high index of suspicion is needed to diagnose, detect and institute early intensive and life saving interventional and therapeutic measures.

A SEROEPIDEMIOLOGIC INVESTIGATION OF HIV-1 SEROCONVERSIONS AMONG U.S. MILITARY SERVICEMEMBERS DEPLOYED TO OPERATIONS ENDURING FREEDOM AND IRAQI FREEDOM

CPT David Schnabel, MC USA, Paul Scott, MD, MPH; Francine McCutchan, PhD
United States

Abstract

To determine if HIV-1 seroconversions that occurred among US Army servicemembers in the period 01 October 2001 to 31 August 2005 represent infections acquired prior to, during, or after deployment to OPERATION ENDURING FREEDOM (OEF) and/or OPERATION IRAQI FREEDOM (OIF). To determine the relative proportion of genetic subtypes (B versus non-B) and recombinant forms of HIV-1 among US Army seroconverters deployed to OEF and/or OIF. To determine whether the phylogenetic relationships between HIV-1 strains are consistent with one or more transmission linkages among cases. To describe the demographics of HIV-1 infections among US Army servicemembers who deployed to OEF and/or OIF. Army servicemembers who deployed to OEF and/or OIF during the study period and had an HIV-1 seroconversion after their initial deployment were included. Demographic variables, deployment dates, and HIV test dates and results were obtained from the Defense Medical Surveillance System. The first "available" HIV positive and last "available" predeployment HIV negative specimens were obtained from the DoD Serum Repository. Genotyping was performed using the Multi-region Hybridization Assay, B non-B and putative non-B strains were identified for partial or complete genome sequencing. Partial and full length sequencing will be performed to assess for transmission linkages between cases. The Roche Amplicor v.1.5 test was used to identify evidence of HIV-1 infection in seronegative predeployment specimens. Seroconversions were classified as deployment related if the estimated date of seroconversion occurred between a subject's OIF/OEF deployment start and end dates. Seropositive specimens were obtained for 66 of the 67 cases identified. 28 cases were probable deployment related seroconversions, 17 were unlikely deployment related, and 22 were not related. Of the probable cases, all were male. 57% were from black servicemembers, and 42% were from grades E5-E9. 27 of the 28 probable deployment related seroconversions were associated with OIF. To date, 45 of 66 specimens have been screened. Six specimens (13%) are confirmed or suspected non-B subtype. Three confirmed non-B specimens are subtype A, C, and G.

Conclusions: These data do not suggest an increased incidence of HIV infection among servicemembers who deployed to OEF/OIF compared to the overall Army HIV rates. These data demonstrate an increase in the genetic diversity of HIV infections above that of previous reports in the U.S. military. These data inform HIV-1 vaccine development and underscore the military's need for a globally effective, multi-clade vaccine. Poor specimen quality and limitations in deployment data have made identification of deployment related HIV-1 seroconversions imprecise.

MILITARY SUPPORT IN CIVILIAN AID AND CIVILIAN SUPPORT IN MILITARY INTERVENTION

McQueen, Kelly (Dr.)
United States

Abstract

The global war on terror, the recent string of natural disasters and the Iraq war have permanently impacted the humanitarian enterprise and the manner in which humanitarian aid is delivered. The evolution of conflict and war toward asymmetrical rather than conventional strategies has impeded security in these humanitarian crises, and has made the delivery of humanitarian aid in some cases impossible. International and Non-Governmental Organizations struggle to maintain their basic principles of independence, neutrality and impartiality within environments which increasingly require security for the delivery of aid and relief. Recent events in Iraq and Afghanistan have raised the question, is military intervention an inherent component of the humanitarian crises of the 21st century? A recent directive by the US Department of Defense (DoD) which requires military training in all aspects and at all levels of stability operations indicates a long term commitment for providing support in humanitarian crises. This presentation will explore the role of the military in civilian humanitarian missions, and the role of civilian organizations in military stability operations. Theories of involvement and support, as well as the challenges of these unique cultures working side by side will be discussed.

MEDICAL CHALLENGES AT A FORWARD AIR BASE IN RESPONSE TO A NATURAL DISASTER - THE TSUNAMI EXPERIENCE

Surg Cdr Sameer Kapoor
Armed Forces Medical Services, India

Abstract

December 26, 2004 will be remembered as a day of one of the worst natural disasters faced by mankind. As per WHO estimates, the death toll due to the earthquake followed by the Tsunami is 300,000 and the Indian figures are 10,749 dead, 5640 missing of which 5554 are from the Andaman and Nicobar (A&N) Islands alone and are feared to be dead.

All jetties on the Islands were either damaged or destroyed as a result of the Tsunami; hence the only possible means of evacuation of casualties from the remote Islands was by aircraft, which were exclusively employed in the first few days. A medical aid camp was set up at the Naval Air Station, INS Utkrosh by 1200h on 26 Dec 04. It received casualties from 1700 h on 26 Dec 04 till 09 Jan 05. It was the nodal point for reception of all casualties in the first few days of the relief operation and played the role of a filter area and a community aid area. Its primary task was to receive, triage, resuscitate/stabilize and treat as many casualties as possible, referring only those who required urgent life/limb saving surgery/specialized care to hospitals. 80% of the 500 casualties were treated at the medical camp itself.

The other major task was to ensure the health of military aircrew and ATC crew in the face of prolonged stressful sorties under adverse conditions and advise on prevention of fatigue. The present

study is a descriptive report of the challenges faced in setting up of the INS Utkrosh medical camp, triage and treatment of casualties and prevention of outbreak of infectious diseases. It also briefly describes the types of cases encountered during the relief operations and strategies adopted to prevent fatigue in air crew and ATC Crew. The report has been written with the intent of describing the morbidity pattern in such a disaster as well as outlining the requirements in setting up such a medical camp to help plan for future disasters. A few recommendations based on the experience are made at the end of the report.

CIVIL-MILITARY ACTIVITIES IN STABILITY OPERATIONS

Bonventre, Eugene (Colonel)
United States

Abstract

On November 28, 2005 the US Deputy Secretary of Defense issued a new policy directive that tasks US military medical personnel to prepare to meet civilian health sector requirements during Stability Operations in peacetime and during post-conflict transition. Until now, the military health service has been prepared only to prevent and treat combat injuries and disease in soldiers, so this new policy is a paradigm shift. This paper proposes a new framework for addressing the civilian health sector during military operations based on lessons learned in Iraq, Afghanistan and Sierra Leone and other military operations, as well as on exercises and mission rehearsals. The paper will demonstrate that addressing the civilian health sector can reduce the likelihood of conflict, and mitigate the effects of conflicts that do occur. The most effective method for military medical personnel to contribute to regional stability is to preserve the capacity of the Host Nation's health sector; to restore that capacity if preservation fails; and to prepare to treat injuries and disease in the civilian population as a gap-filler while capacity-building proceeds. Significant changes must occur in US military doctrine, organization, training, education and leadership to implement this new policy. The military must cultivate critical partnerships with other governmental and non-governmental organizations in order to successfully plan and conduct activities in the civilian health sector. The paper will also discuss the funding required to conduct civil-military health activities.

PRINCIPLES OF MEDICAL DISASTER RESPONSE- THE TSUNAMI MODEL

Vroegindewey, Gary (Colonel)
United States

Abstract

INTERVENTIONS FOR INFECTION CONTROL, INFECTIONS AND ANTIBIOTIC USE IN A LEVEL- II NEONATAL INTENSIVE CARE UNIT – A FIVE YEAR STUDY (2001 TO 2005)

Surg Cdr S Shankar Narayan
Armed Forces Medical Services, India

Abstract

Background: Neonates in any NICU undergo number of interventions that place them at risk for infection.. Interventions; infections and antibiotic use in neonates at a Level III NICU that underwent progressive modernization over a 5 year period is analyzed to detect trends and identify areas for intervention to reduce infections.

Method: Data from records of neonates admitted from Jan 2001 and Nov 2005 (both inclusive) was analyzed. The composition of the study population; incidence of sepsis, pneumonias and superficial infection; interventions that predispose to infections (ventilation, long lines, exchange transfusion and surgery over the 5 year study period were studied.

Results: A total of 5004 neonates were born in the 5 years of whom 1612 (32.2%) were admitted to NICU. There was a significant reduction in admissions to NICU over the years (33.6% in 2001 to 29.6% in 2005; $p < 0.05$). There was no significant change in the percentage of preterms or small for gestational age infants. Low birth weight infants however showed a significant increase from 12.5% in 2001 to 19.1% in 2005 ($p < 0.05$). Overall mortality was 0.48% without any significant change over the 5 year. Episodes of both, clinical as well as culture-proven sepsis had peaked in 2004 and then declined in 2005 (statistically significant only for culture-proven sepsis episodes ($p < 0.03$). Over the study period, the incidence of invasive ventilation significantly increased from 1.8% in 2001 to 6.1% and insertion of long lines from 2.1% in 2001 to 5.1 % in 2005. Other studies interventions remained steady or decreased.

Conclusion: Over the 5 year study period, despite significant increase in the number of low birth weight infants, admissions to NICU actually significantly decreased. Increase in invasive interventions probably resulted in a significant overall increase in infections in general and of culture proven sepsis in particular, though this spurt seems to have been reversed in 2005. Despite this, overall rates of infection and mortality remain markedly low. Thus, though the existing anti-infective measures and protocols seem to be able to contain infection in the NICU, here is scope to further reduce infections especially in infants undergoing invasive interventions.

Keywords: Neonatal, Infection, Interventions

THE EVOLVING ROLE OF PEDIATRICIANS IN THE U.S. ARMY

Burnett, Mark (Lieutenant Colonel)
United States – Hawaii

Abstract

The Evolving Role of Pediatricians in the U.S. Army The history of Pediatrics and Pediatricians in the U.S. Army has been relatively short, but quite dynamic. There was no real need for Army Pediatricians until the aftermath of the Second World War when hundreds of thousands of American servicemen and women were stationed overseas with their families, in areas unable to be supported by local physicians. In the field environment, Pediatricians were a misunderstood specialty serving in roles as varied as general medical and preventive medicine officers. The numbers deployed to Korea and Vietnam were modest compared with the overall numbers of physicians who served. In the aftermath of the Cold War, the U.S. Army Medical Corps has been tasked to serve in new and different roles. Supporting the Army in “Missions Other than War” and Peacekeeping or Peace-enforcing roles has meant a change in the way that Pediatricians are utilized. Unique skill sets have been developed through the creation of training programs such as the Military Medical Humanitarian Assistance Course as well as the Hostile Environments Life-Saving Pediatrics Course. These programs are designed to help the Pediatrician and non-Pediatrician alike in caring for children who are caught in the midst of today’s wars that lack defined battle lines. The new manner in the way that Pediatricians are being utilized is evident in the current operations in Afghanistan and Iraq. Over half of all Army General Pediatricians and Pediatric Subspecialists on Active Duty have been deployed to Southwest Asia, making Pediatricians one of the U.S. Army’s most deployed medical specialties. They have served in roles as varied as flight surgeons, brigade surgeons and as Pediatricians. The role of the Pediatrician in the U.S. Army has evolved. Upcoming personnel changes will place a Pediatrician on staff with every deployed Combat Support Hospital in the Army. The deployed hospital’s formulary will now be augmented with a “Humanitarian Set”, similar in nature to the World Health Organization’s “Interagency Emergency Health Kit”, further demonstrating the Army’s commitment to more efficient humanitarian care. No longer overlooked, Army Pediatricians are now seen as vital to the war and peace efforts with the skills that they bring in terms of combatant care, as well as humanitarian assistance.

CORRELATION OF THREE SCREENING TECHNOLOGIES IN CASES OF CERVICAL DYSPLASIA AMONG DEPENDENTS OF ARMED FORCES PERSONNEL

Lt Col Manash Biswas, Air Cmde GS Joneja, Lt Col K Kapur
Col GS Chopra, SM, Lt Col Kavita Sahai
Armed Forces Medical Services, India

Abstract

This study aims at analyzing the efficiency of three screening technologies and co-relating their results to obtain evidence for reliability of the methodology when used in conjunction to screen, treat and follow-up women with cervical intraepithelial abnormalities.

100 Cases underwent a Pap smear, HPV testing and video-colposcopy. The study procedure on

each case was completed by taking a cervical biopsy, the report of which was set as the gold standard against which all other methodology was compared and correlated. HPV was detected by DNA based tests by the Hybrid Capture 2 microtiter assay.

The sensitivity of cervical cytology was 69.23% and its specificity was 64.36%, the video-colposcopy sensitivity was 84.61% and specificity 82.75% and the HPV test sensitivity was 61.5% and specificity 91.6%. On co-relating the three tests, the analysis showed that there was 81% agreement between HPV test and conventional cytology when analyzed with detection of HSIL. Further there was 75% agreement between HPV test and Video-colposcopy findings and 78% agreement between Pap cytology report and Video-colposcopy. The agreement was less (67%) between conventional Pap cytology report and video-colposcopy when CINI cases were also considered.

There was than 75% agreement between the three methodologies in this study. We recommend continuing cervical cytology as primary screening in a low resource and peripheral setting and performing HPV testing as primary screening for women >30 years at high resource settings and tertiary care centers by Hybrid capture 2 Technology.

UTERINE BALLOON THERAPY—MENORRHAGIA MANAGEMENT MADE EASY

Lt Col K Kapur, Air Cmde G S Joneja, Lt Col M Biswas
Armed Forces Medical Services, India

Abstract

Menorrhagia is a common problem in women of reproductive age. Its etiology in the absence of organic pathology, hormonal or hematological disorders remains largely unknown. Traditional medical therapy may not be beneficial in the long run. Hysterectomy for this condition is an invasive over treatment. First generation endometrium ablation techniques were aimed at destroying the endometrium but this required elaborate operative endoscopy set up, expertise and were associated with life threatening complications. To do away with these problems second generation endometrial ablation techniques like uterine thermal balloon therapy were introduced.

Between Nov 2002 & Feb 2005 fifty patients were selected for the procedure. The patients qualified for the procedure if they had completed their family, had normal pelvic ultrasound findings, benign endometrial histology, normal PAP smear & clinically a normal size or bulky uterus 50% patients were in the age group of 35-45 years. 28(56%) procedures were done under local anaesthesia & 22(44%) under general anaesthesia for selected indication.

The patients were followed up for a period of 3-29 months (median 16 months). 7(14%) had amenorrhoea & 40(80%) had normal periods or hypomenorrhoea. 3(6%) patients continued to have menorrhagia & were failures. 94% patients were satisfied with the procedure & there were no major complications in this series.

Uterine balloon therapy is a simple, safe & effective method for the treatment of menorrhagia in selected patients & it avoids the need for hysterectomy.

Keywords: Uterine Balloon Therapy, Menorrhagia.

HIV AIDS A WHO PERSPECTIVE

Dr. Glenn Schnepf
World Health Organization

Abstract

The Global Access to HIV Antiretroviral Therapy Programme (“3 by 5”) was launched in late 2003 and provided a strategy for ensuring treatment for 3 million people living with HIV/AIDS in low and middle income countries by the end of 2005. The “3 by 5” target was not reached, but positive steps were achieved with the increase from 400,000 to approximately 1 million people receiving treatment by the end of June 2005. However, there is reason to be hopeful that growth rates will continue to increase over time. The limitations and challenges of the “3 by 5” programme can be overcome with further WHO and UNAIDS guidance. WHO recommends increased political commitment, financial sustainability, human resources and supply management, integrating treatment and prevention programmes, as well as providing equitable access and the need for coordinating support and evaluation of the “3 by 5” programme. While the WHO HIV/AIDS activities and resources that promote/facilitate greater cooperation between WHO and the militaries are limited, it is hoped that they will increase over time.

IMPLEMENTATION OF INFORMATION, EDUCATION AND COMMUNICATION ACTIVITIES IN A NAVAL STATION

Surg Cdr Sundeep Bhandari
Armed Forces Medical Services, India

Abstract

Acquiring HIV infection in the country at large, as well as in the Services, is mainly due to the risk taking behaviors of indulgence in unprotected promiscuous sex. The action plan emphasized the importance of Information, Education and Communication (IEC) as the best method for achieving desired behavioral changes making use of techniques of Behavioral Change Communication (BCC).

To ensure proper implementation of IEC activities in Armed Forces, SHO (Mumbai) was the first Naval IEC node established. With techniques like Family Health Awareness Week and an approach through Command, NWWA, Units (Afloat/ashore), Schools, dockyards, the programme was launched extensively. Certain Innovative measures introduced in Mumbai Naval Station were- Combat AIDS week, Lady health workers (LHW) course, Naval Wives Welfare Association (NWWA) coffee morning & Life skills education in Schools.

Keywords: IEC Mumbai, BCC, First Naval IEC node, Innovative measures

SUCCESSFUL PREVENTIVE EFFORTS RESULTING IN CONTROL OF HIV EPIDEMIC IN PAKISTAN ARMED FORCES: TWO DECADES OF EXPERIENCE

Tariq, Waheed Uz Zaman (Brigadier)
Pakistan

Abstract

Pakistan remained no longer free from HIV pandemic. Initially, the virus was acquired by Pakistani nationals living abroad, mainly in the Middle East. Most of them lived alone. This was because of their limited income not been sufficient to provide a reasonable standard of living abroad and economical pressures imposed by the extended families back home. The virus was mainly acquired there by the sexual encounter with commercial sex workers and rarely by the blood transfusion. Most of the infected persons were deported and exposed their spouses to the virus. The National AIDS Control Programme has so far reported 3,000 cases of HIV infection so far but the national estimate may well be 60-80 thousand persons living with the HIV infection in Pakistan.

Our experience: Armed forces Institute of Pathology (AFIP), Rawalpindi was the first to provide the comprehensive diagnostic and counseling services regarding the HIV/AIDS. We have reported almost 12% of the total known cases in the country and our experience is a good index of the trend of the national scenario. The first case of the HIV diagnosed by the institute was in 1987. He was Tanzanian sailor presenting in Karachi. A lady was diagnosed with HIV infection, which she had acquired the virus by the blood transfusion in United Arab Emirates and had also passed her virus to her newborn son in 1989, while her husband remained free from the virus. Then the cases started rising every year, until a plateau was reached in the year 2000. Altogether 1,673,224 blood samples have been tested for anti-HIV, since 1987. All the blood samples were tested by the ELISA and western blot. Detailed history of all the seropositive cases was taken. The cases were 2 in 1987, 2 in 1988, 1 in 1989, 6 in 1990, 6 in 1991, 10 in 1992, 8 in 1993, 10 in 1994, 11 in 1995, 15 in 1996, 24 in 1997, 26 in 1998, 27 in 1999, 40 in 2000, 23 in 2001, 32 in 2002, 33 in 2003, 25 in 2004 and 2 in 2005. There was a male preponderance; 263 being males and 37 females. The countries of acquisition in the Middle East (total 82) were as follows: 71 from UAE, 6 from Saudi Arabia, 2 from Oman and 1 each from Kuwait, Qatar and Egypt. Those who acquired from Europe (total 15), 2 were from France, 6 from the Soviet Union, 2 from Spain, 2 from Greece and one each from Denmark, Portugal and Turkey. A total of 13 cases acquired the infection from the Far East, out of them 10 had acquired in Thailand and one each from Korea, Indonesia and Philippines. A dozen of cases had come from Africa: 10 from Kenya and one each from Uganda and Tanzania. As the time passed more cases of indigenous origin were reported and total number of locally acquired cases within the country was 153. Sexual transmission was predominant and was established in 220, out of them 163 were heterosexual, 34 homosexual and 23 bisexual. Blood transfusion was seen as a plausible cause in 48 cases. Mother to child transmission had occurred in 10 cases at the time of birth and in another 2 cases, breast feeding incriminated. No history could be obtained in 20 cases. The pediatric cases were 43 (20 were less than 10 years of age and 23 between 11 and 15 years of age). In an age group of 16-20 years, we had 34 cases. In highly active adult age of 21-40 years, we had detected 163 cases. Then between 41 and 50 years age, 48 and between 51 and 60 years, we had 10 cases. Only 2 cases were seen after the age of 60.

Armed Forces Personnel: In the Armed Forces personnel and their families the first case was a blood transfusion associated in 1990, when the donor was a civilian expatriate from abroad. Then a universal programme of screening of all blood transfusion was launched and all the infected blood donations were discarded and there had been no case associated with the blood transfusion. Pakistan Army is the major contributor of UN troops, who are mainly deployed in the African countries, known to be highly endemic for HIV/AIDS. The troops are tested before being dispatched abroad, at repatriation and six months after. A case of HIV infection was reported in 1994, who had acquired the virus from a prostitute of Nairobi, on his way from Somalia to Pakistan. The preventive efforts were intensified

in terms of spiritual motivation, health education, discipline, surveillance and periodical review of the situation. The rest and recreation programme was replaced by an Umra package (visit to holy places in Saudi Arabia). There had been no further case reported of having acquired the HIV during the stay of troops abroad. However, half a dozen further cases have been reported in troops (with occasional transmission to their family members). All of them had acquired the HIV from within the country (mainly by the sexual encounter). All such cases continued to be treated in the Armed forces facilities and no stigma was attached to their HIV infection. The antiretroviral therapy is available since 2003 and further efforts are being made to have a smooth supply of these drugs. There is need for regional cooperation for the production and supply of these antiretroviral agents. Pakistan still remains a low HIV prevalence country in the region. The experience of the Armed Forces of Pakistan had been admired internationally in the past and the efforts for prevention of the HIV had proven fruitful. This is mainly due to the faith, spiritual motivation, discipline, health education, peer pressure, surveillance and constant review of the scenario. The efforts are to be fortified with the help from UNAIDS and other programmes. All modern diagnostic, therapeutic, monitoring and health care facilities are available in our set up to treat the AIDS cases. There is further need to integrate such efforts with the available regional programmes. It is believed that the efforts have to be constant and unending and there is no room for complacency, as the situation is liable to be changed at any time. With increased mobility and international interaction, the vigilance is even needed more. Once the HIV is prevalent within the country, there is an added responsibility for the command and medical officers to keep the surveillance, confidence, discipline and an atmosphere free from prejudice and stigma. The action plans are in hand and the situation is under review.

HIV PATIENT EVALUATION: A SURVEY OF KNOWLEDGE, ATTITUDES, AND PRACTICES OF ANTIRETROVIRAL THERAPY IN INDIA

Ramchandani, Suneil (Lieutenant)
United States

Abstract

Of the approximately 5.1 million persons who are estimated to be HIV-infected in India, a dominant number of patients are not currently on antiretroviral therapy (ART). It has long been assumed that relieving the financial costs of ART medications will lead to widespread use and an improvement in public health. In 2004, the government of India began a national program to provide free generic ART in public clinic settings. However, no previous study of India has examined possible educational, social, and logistical factors that could limit proper ART access or lead to resistance of generic ART medications via poor adherence and subsequent transmission. From February - June 2004, a cross-sectional survey was conducted among HIV-infected persons attending five HIV clinics (two private, two public, and one public/private) in west, south, and central India. Patients were randomly interviewed using a standardized, validated questionnaire. Of 1,667 respondents, the median age was 34 years, 69% were male, 79% had < high school education and 72% had a household income of < 5000 rupees (\$100) per month; 53% attended a private clinic and 47% a public clinic. Only 609 (33%) had ever heard of ART and 19% of these thought that ART could cure HIV. Only 31% had ever discussed ART with their primary provider. Of 390 patients on ART, only 85% were actually on ART according to their provider. Major barriers to taking ART were cost (33%), lack of knowledge of ART (41%) and deferral by the patient's physician (30%). More than half of all public and private patients, had not heard of CD4 (57%) or viral load testing (80%), or received these tests (32% and 11% respectively). Those attending private clinic attendees were more likely to be male, have a higher education, be partnered, have a higher income, and have had a CD4 or viral load ($p < 0.0001$). They were also 4 times more likely to be on ART (35% vs. 9%, $p < 0.0001$). In multiple logistic regression, attending a private clinic (adjusted OR [AOR] 4.88, 95%CI 3.53-6.75), older age (AOR 1.60, 95% CI 1.36-1.89), and having

heard of ART (AOR 2.78, 95% CI 2.07-3.73), or having had a CD4 cell count (AOR 3.69, 95% CI 2.77-4.92) were independently associated with increased likelihood of ART use; female gender (AOR 0.62, 95% CI 0.48-0.81) and distance from clinic (AOR for <1 hour vs. 1-5 hours 0.49, 95% CI 0.33-0.71) were significantly associated with a decreased likelihood. We observed low levels of ART knowledge and access among HIV infected patients attending selected clinics throughout India. HIV patients cared for in public health care facilities were more likely to have marginal financial and social support mechanisms as compared to their private counterparts. In addition to financial barriers, access to ART in India may be low due to poor awareness. Further studies on adherence to medication regimens should be correlated to certain patient characteristics, providing a guide for where to target educational and preventive health mechanisms.

EXPRESSION OF ACTIVATION MARKER (CD38) ON CD8 T-CELL IN HIV-1 INFECTED

Sutchana Tabprasit, First Lieutenant
AFRIMS, Bangkok, Thailand

Abstract

The monitoring of progression of HIV-1 and efficacy of anti-retroviral therapy are becoming very important in developing countries such as Thailand. The current CD4 count and plasma viral load are used in monitoring, but they are too costly in Thailand. Thus, alternative parameter(s) which are cost-effective and informative techniques are urgently needed for implementation in Thailand. The uses of CD38 as a marker of cell activation and CD4 counts for monitoring of anti-retroviral therapy have been described by many investigations. Subsets of activated CD4+, CD8+ T lymphocyte defined by the effectiveness of membrane expression of the activating antigens CD38 and HLA-DR were performed. CD38, which was identified in the early 1980s by Reinherz et al, was initially considered as an activation antigen. There were counted by four-color flow cytometry in prospective of pre and post anti-retroviral therapy as well as in healthy adult Thai volunteers. Whole blood samples from HIV-infected patients were stained with the following monoclonal antibodies directly conjugated with fluorochromes: HLA-DRfluorescein isothiocyanate (FITC) / CD38-phycoerythrin (PE) / CD8-peridinin chlorophyll protein (PerCP) / CD4- allophycocyanine (APC), HLA-DR-FITC/CD38-PE/CD8-PerCP/CD4-APC, CD38-fluorescein isothiocyanate (FITC) / HLA-DR-phycoerythrin (PE) / CD8-peridinin chlorophyll protein (PerCP) / CD4- allophycocyanine (APC), CD38-FITC/HLA-DR-PE/CD8-PerCP/CD4-APC. The frequency and mean fluorescent intensity (MFI) of CD4+ and CD8+ expressing CD38 were then determined by flow cytometer.

Plasma samples were also collected for viral load determination. Results showed that the percent and MFI of CD38 on CD4+ and CD8+ T cells in normal subjects were higher when using the PE conjugated anti-CD38 mAb than FITC conjugated anti-CD38 mAb, and that CD38 expressed at a high frequency on CD4+ and CD8+ T cells in HIV-infected patients when compared with normal subjects. While there was an increase in the MFI of CD38 molecule expressed by CD8+ T cells, the co-expression of CD38 and HLA-DR on these cells showed the most dramatic increase. Following anti-retroviral therapy, the MFI of CD38 expression on CD4+ and CD8+ T cells were decreased when compared with untreated patients. The correlation of CD38 expression in untreated patients showed inverse correlation between CD38 expression (percent of CD38 and CD38 MFI) and absolute CD4+ T cells counts, CD38 expression (percent of CD38 and CD38 MFI) and percentage of CD4+ T cells (%CD4) on CD8+ T cells. Moreover, there was a direct correlation between CD38 expression (percent of CD38 and CD38 MFI) and plasma viral copies/ml in untreated patients when using PE conjugated anti-CD38 mAb. Finally, the patients who have success in anti-retroviral therapy (viral load <50 copies/ml) showed decrease in percentage of CD38 expression on CD8+ T cells. The use of flow cytometric assisted CD38 and HLA-DR expression may help provide a cheaper platform for monitoring pre and post antiretroviral therapy in HIV-1 infected patients in resource-limited settings.

Session 8B : Neuropsychology

COMBAT STRESS IN LOW INTENSITY COMBAT OPERATIONS

Wg Cdr Amitabh Shanker Saxena, Ramadugu Shashikumar
Armed Forces Medical Services, India

Abstract

Combat Stress is a preventable morbidity of war. In the current scenario, where counter insurgencies have been the bane of many nations the world over, combat stress in this unconventional warfare needs to be studied in detail. The paper analyses combat Stress in CI Ops with special relation to LICO in J&K. The study was carried out based on interactions with the officers involved in active operations in Sri Lanka, CI Ops, in J&K and North-East, as well as officers of friendly foreign countries exposed to CI Ops in their nations, lectures during 58th Staff Course and dissertations submitted at the Defence Services Staff College and College of Combat, Mhow.

The various stressors in a CI Ops location are analysed, with the inter-relationship with the stressors of the Armed Forces. The factors are analysed and solutions offered. Combat Stress is an unalienable part of CI Ops. Efforts at mitigating this stress have faced the stigma of psychiatric interventions, inadequate knowledge about signs and symptoms of the illnesses associated with Combat Stress.

SUICIDAL TENDENCY AMONG MILITIAS: A STUDY IN THE 3RD ARMY REGION ALONG THE THAI BORDER

Chalita, Sukhawwarn (Lieutenant Colonel)
Thailand

Abstract

Militias those who working in the area of region 3 has the mission for: take care of internal peace at that area, conserving population and resources: including support to prevent any harmful events along Thai border such as in the military suppression of Drug Trade, illegal immigration, and deforestation. Due to these missions there were the lost of Militias every year even though the cause of losing are from either in the field or not in the field. There was a report in 2000 that 18 cases of Militias committed suicide in the region 3. This lost of Militias has an impact on duty replacement. Method: 264 Militias who's working in the area of region 3 were sampling and collected data by using questionnaire at the border. The questionnaire consists of 5 parts. Analysis data by using statistics: percentage, Factor analysis and Pearson Moment Correlation. Results: Showed that most of Militias were voluntary in the Army, willing to be as Militias, satisfy with their work along the border, the compensation between 5,001 ;V 6,500 bahts (apm. 128 ;V 166 us dollars). Low compensation is in lieu of a higher cost of living. They have 10 days off in each month. They need the Army welfare such as: more compensation, vehicle, up date weapons which appropriate to the mission. About the factors found that: there are 14 factors leading to suicide among the Militias. The 1st factor has 25 elements and eigen value 24.04 can lead to suicide 36.31%. Half of the sampling had ever seen their friends suicide. 1.1% have high score of depression, 11% have high score of general mental health. The relationship between the general mental health and depression among the Militias found positive at P.001 (r = .630).

STROKE IN YOUNG SOLDIERS

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Armed Forces Medical Services, India

Abstract

There is inadequate understanding about the medical problems of long-term stay at high (>3000m) and extreme (>5000m) altitudes, as these areas are generally considered inhospitable. Combat at altitudes approaching 3000 meters above sea level therefore impose enormous physical and mental strain on already well-acclimatized, trained Light Infantry soldiers. Young strokes particularly seen in this harsh terrain require special evaluation to identify possible risk factors.

Prospectively collected clinical records of all young strokes, aged below 45 years, hospitalized at Army Hospital (Research & Referral), Delhi while in combat at a High Altitude Area (HAA) were reviewed to identify their clinical profile. All patients studied had been subjected to detailed neurological exam, routine hematological, Biochemical and Radiological workup. All the patients underwent Carotid Doppler, Echocardiography, Neuro-imaging (CT Scan/MRI/MR angiography). Vasculitic and Pro-coagulant factors were investigated in all the patients.

Of the 65 young strokes admitted for evaluation in this hospital since July 2001, 12 (18.46), all males, were evacuated from HAA while in active operations. Their age ranged from 23-40 years (Mean=32.7). Nine(75%) occurred at heights between 3000m-4000m and three(25%) were evacuated from heights above 4000m. Ten (83.33%) of these had Ischemic infarcts and two (16.66%) had Intracerebral haemorrhage. Initial presentation was considered as High Altitude Cerebral Edema (HACO) in all the cases. One (8.33%) patient presented with seizures and one(8.33%) had additionally Lt Axillary Artery Thrombosis. Two(16.66%) had primary hypertension. Hyperhomocysteinemia was found in two(16.66%) patients while one (8.33%) patient was deficient in protein C. All the patients were recommended adequate Activities of Daily Living (ADL) to go back to sheltered duties.

Young strokes in HAA mimic HACO. HAA appears to be an independent risk factor for arterial thrombosis causing strokes. Even though the study has a small number of subjects, pro-coagulant factors appear to lay an important role in causing strokes in young soldiers in HAA.

THE SOLDIER READINESS PROGRAM EXPERIENCE OF THE NEUROLOGY CLINIC AT TRIPLER ARMY MEDICAL CENTER, HONOLULU, HAWAII

Peter Weber, Colonel
U.S. Army, Tripler AMC, Hawaii, United States

Abstract

Schofield Barracks in Hawaii is the home of the 25th Infantry Division. The 2nd and 3rd brigades were deployed to Iraq and Afghanistan in support of Operation Iraqi Freedom, and Operation Enduring Freedom respectively. Each deploying soldier's deployment status is determined by being screened through a "Soldier Readiness Process" (SRP) that evaluates several aspects of the Soldier member's life (medical, dental, legal, financial, military, personal, and family). The Neurology clinic at Tripler Army Medical Center was consulted 291 times to evaluate patients in a SRP status (from 1 December 2003 through 3 November 2005). Retrospectively, the Neurology clinic's initial SRP consults and follow up appointments were reviewed. The information was collected and analyzed including the following variables: 1. Age, 2. Sex, 3. Service, 4. Active duty versus reserve, 5. Officer/Enlisted, 6. Deployment/Redeployment, 7. Diagnosis, 8. # evacuated, 9. Number of visits, and 10. # Medical evaluation boards. In conclusion, primary headache disorders were the most common neurological condition that a formal neurology consultation was sought. Because of its high prevalence, primary care providers who have initial contact with the Soldier must be familiar with the diagnosis and confident about the treatment of the primary headache disorders. In addition, certain "alarm" symptoms must be recognized early in the evaluation to facilitate prompt neurological consultation and care.

FROSTBITE AT HIGH ALTITUDE - OUR EXPERIENCE

Brig Surinder Mohan Sharma
Armed Forces Medical Services, India

Abstract

Frost bite is seen among our troops stationed in high altitude area including the Siachin Glacier and other areas of Ladakh. The troops are exposed to extreme cold climate in winters when temperature dips down to - 20' C to -60' C accompanied with high wind velocity.

As a result of extreme cold accompanied with high wind velocity and direct contact with snow, cellular architecture is destroyed due to ice formation, and thrombosis of capillary circulation occurs by sludged formed elements of blood.

The frost bite can be divided into four grades depending upon the severity ranging from pain and swelling to blisters and gangrene of affected parts. The period of study ranged from the years 1985 - 86 and 1997 - 99. During 1985-86, 85% of patients required air evacuation, whereas 15% were evacuated by road. During this period, the patients were treated in air conditioned wards and were exhibited antibiotics, analgesics and rapid rewarming of the affected parts upto 40'c of water. GR- III and IV frost bite cases were in addition infused with low molecular wet dextran. All grade IV frost bite cases required surgery.

During 1996 in another trial, 91% of grade I and grade II cases recovered completely with no disability, where as 4% required minor amputation and yet another group of grade III frost bite had minor tissue loss (about 5%).

During 1997 frost bite cases were subjected to trial by topical and oral medication by homeopathic medicines like Agacicus, mother tincture, Agacious mus and aloe. The use of homeopathic medicine in frost bite cases proved harmful and disastrous.

Keywords: Cold Injury Frost Bite.

STUDY OF PATHOGENETIC FACTORS FOR HIGH ALTITUDE COAGULOPATHY

Lt Col Jyoti Kotwal, Col GS Chopra, SM, Brig VY Sharma
Lt Col CV Apte, Lt Col Atul Kotwal, SM
Armed Forces Medical Services, India

Abstract

Increased frequency of thrombotic episodes have been reported in European climbers and Indian soldiers at high altitude area (HAA). The risk of spontaneous thrombosis has been found to be 30 times higher on long stay at HAA. However studies on pathogenesis have provided conflicting results and most of the studies in the West have been for short term stay. We were thus prompted to study the effects of prolonged stay at high altitude in Indian soldiers which may lead to increased propensity to thrombosis. The study consisted of two components. The first was study of pathogenic hematological factors in patients who developed thrombotic episodes during their stay at HAA. In the second component, a cohort of healthy soldiers was studied to see effect of prolonged stay in HAA. The study

was carried out between Dec 2000 and June 2003.

A total of 55 patients had thrombosis during the period of study consisting of 21 cases of stroke, 19 cases of DVT, 5 of splenic infarct, 4 of abdominal vein thrombosis, 2 retinal vein thrombosis, 3 acute myocardial infarction and one of pulmonary arterial hypertension. Thrombophilia was identified in 09/55 cases. Another 5 had increased homocysteine levels. 2 of 5 cases with splenic infarct had sickle cell trait. However, all cases had much higher Hemoglobin, fibrinogen level, platelet activation factor and plasminogen activation factor 1 (PAI-1) levels as compared to age and sex matched controls and the difference was statistically significant ($p=0.00$). In the cohort of healthy individuals a statistically significant rise in hemoglobin and platelet count was observed on stay in HAA. However, the rise in hemoglobin was not in the range to cause hypercoagulability as a single factor due to hyperviscosity. A rise in fibrinogen, platelet activation factors and PAI-1 levels was also observed. All these factors are pointers towards an increased tendency to thrombosis thereby showing that prolonged stay at HAA causes a hypercoagulable state similar to Diabetes Mellitus.

Thus, prolonged stay at high altitude causes a prothrombotic milieu leading to increased thrombosis in normal individuals and asymptomatic thrombophiliacs. Based on this a double blinded randomized control trial with homocysteine lowering vitamins has been started to assess their effectiveness in reducing the thrombotic tendency at HAA.

A THE CHEMICAL, BIOLOGICAL, AND PHYSICAL CHARACTERIZATION OF AIRBORNE MICRO- PARTICULATES FROM KUWAIT

M.B. Lyles, H.L. Fredrickson, A.J. Bednar, H.B. Fannin, and T.M. Sobecki
United States

Abstract

In the Middle East, dust and sand storms are a persistent problem and can be inhaled into the mouth, nasal pharynx, and lungs due to the size and abundance of these micro-particulates. The chronic and acute pulmonary effects of sand inhalation have not been well studied nor has the dust been effectively characterized as to its chemical composition, mineral content, or microbial flora. Scientific experiments were designed to study the Kuwaiti dust as to its physical, chemical, and biological characteristics for its potential to cause adverse health effects. First, Kuwaiti dust samples from different locations were collected and processed. Secondly, initial chemical and physical characterization of each sample including particle size distribution and inorganic analysis was conducted. Thirdly, characterization of biologic flora of the dust was performed. The results from this study suggest that further research may be warranted to provide insight into potential health risks.

INCIDENCE AND RISK FACTORS RELATED TO NOISE TRAUMA IN MALE SOLDIERS

Colonel Ruethai Klannukarn
Royal Thai Army, Thailand

Abstract

Incidence and Risk Factors Related to Noise Trauma in Male Soldiers of The 21st Infantry Regiment, Queen's Guard Jatuchai Methabodee, Apichat Ruchananthawet, Kosin Chaichamnan, Kaltang Sattaya-sunthorn, Jirasak Thanaboon, Sukum Thas-sanachaikul, Tri-yawathanyoo, Wiwat

Ekebooranawat , Pansak Soparat , Wasin Jungtakaulchai, Prayuth Ras- sameehirun, Ratchawit Janwatcharhakan, Arpornpirom Gethpunta , and Ruethai Klannukarn Department of Military and Community Medicine Phramongkutklao College of Medicine Risk factor of noise trauma in year such as; used to shooting gun, used to standing near louding machine, used to out to combat, used to shooting gun out of duty, temporally loss of hearing function after driving vehicle on combat, hearing bomb , s sound, working in loud place, relaxing in loud place, driving and developed to temporally loss hearing function, motorcycle Driving, no used ear ,s protection when shooting gun, no used ear, s protection when stayed in loud place. To study the incidence and risk factors related to noise trauma in male soldiers of The 21 st Infantry Regiment, Queen , s Guard Design : Nonconcurrent Cohort Study Setting : 21 st Infantry Queen , s Guard , Navamintarashinee Camp, Mueng district, Chonburi, Thailand Material and Methods : Thai male military personal at 21 st Infantry Queen, s Guard who was examined the hearing test in past 2 year by the doctors and shows that the normal hearing level as 4 KHz. By collection of data start on 18 -22February 2002 at Navamintarashinee Camp, Mueng district, Chonburi. The collection made by the interviewing by the medical cadet. The questionnaires are about general data, Exclusion Criteria factors, important risk factor of noise trauma, and doing hearing tests with Pure sound audiometer Results : The total study population is 101 cases. The incidence of noise trauma in study population was 13.9 % used to shooting gun ($p = 0.750$), used to standing near louding machine ($p = 0.593$), used to out to combat ($p = 0.605$) , used to shooting gun out of duty ($p = 0.601$), temporally loss of hearing function after driving vehicle on combat ($p = 0.649$), temporally loss of hearing function after shooting gun ($p = 0.202$), used to hear loud noise ($p = 0.413$), hearing bomb, s sound ($p = 0.277$) , working in louding place ($p = 0.395$), relaxing in louding place ($p = 0.407$), diving and developed to temporally loss of hearing function ($p = 0.632$), used to drive motorcycle ($p = 0.081$), no used ear protection when shooting gun ($p = 0.621$) , no used ear protection when stay in louding place ($p = 0.573$) Conclusion : Incidence of noise trauma of Thai male military personal at 21 st Infantry Queen, s Guard who was examined the hearing test in past 1 year is 14 case (13.9 %). From the study shows that the driving motorcycle in past 1 year related with Noise trauma with significant statistics ($p = 0.05$) but that the motorcycle driving could not predict the noise trauma.

AEROSPACE MEDICINE UPDATE

Major General Charles Green
United States Air Force, United States

Abstract

This presentation covers an overview of the AFMS today, the expeditionary and homeland security roles of the AFMS, aeromedical evacuation, aerospace medicine challenges, and positioning for the future.

MEDICAL EVALUATION AND RE-FLIGHTING OF AIRCREW IN IAF

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Armed Forces Medical Services, India

Abstract

Air crews are available assets of any Air Force. Cost and time of training of aircrew, especially for developing countries, is prohibitive. Disease and disability is also inherent in aircrew like in the general population. However, it is well known that pre selection with high medical standards and periodic health screening and monitoring preclude the occurrence of disease in aircrew vis-à-vis age matched general population.

Medical evaluation to detect early disease in aircrew and, when so detected, to ensure that these aircrew are re-flighted at the earliest is a challenge faced by all Air Force aero-medical physicians. In the IAF about 14% of aircrew has some disease or disability. A large number of these diseases are detected in asymptomatic individuals during annual medical examinations indicating the usefulness of such procedures in the military scenario. Morbidity patterns vary between fighter, transport and helicopter aircrew. Age and sex related morbidity attributes are on expected lines. The highest morbidity in IAF aircrew is due to musculoskeletal disorders (31.8%) and then cardiovascular disorders (22%) followed by injuries (16.6%). Detection of disease or disability leads to temporary grounding for a variable period of time from 3 to 6 months. Re-flighting aircrew with diseases that are of permanent nature but which can be considered compatible with flying merits award of a restricted flying category sometimes with a change of stream. The use of drugs in multicrew environment has been progressively introduced in the IAF but their use in the fighter environment is still under review. The various aspects of medical evaluation and consideration for re-flighting aircrew in the IAF are discussed

U.S. NAVAL DEPLOYABLE MEDICAL CAPABILITIES

CAPT W. Robert Kiser, Surgeon
PACFLEET, U.S. Navy

Abstract

COMPARATIVE ANALYSIS OF PERSONALITY CHARACTERISTICS OF DIVERS AND SUBMARINERS

Surg Cmde MJ John
Armed Forces Medical Services, India

Abstract

There are two ways to explore the silent world of ocean depths-either enter the water depths in an enclosed steel vessel-submarine-or carry a reserve of breathing medium and "dive" exposing oneself to the watery environment and its pressure effects. Although both groups, submariners and divers work under water, they differ significantly with respect to their working conditions.

Will working under water for years, bring out peculiar behavioral characteristics or only those possessing certain personality traits can become successful in these careers. A study was carried out on 50 successful divers and submariners using PF which brings out 15 personality factors and one mental ability factor.

Analysis of the study brought out significant difference in the scoring patterns of these groups although both scored very high on adventurousness. Divers scored high on factor F and Q2 while submariners scored higher on O and Q1 and low on F. An attempt was made to correlate these findings to the peculiar environment they work in and the stress they are exposed to. A thought was also given to the selection process as to whether these positive attributes will result in successful diving or submarine careers.

Life threatening stressors of a diver include increased ambient pressure (several times more than the normal one atmospheric pressure and increasing as the depth increases), low ambient temperature (hypothermia), low visibility, poor visual and auditory communication abilities, effect due to breathing gases, dangers from marine animals and isolation. On the other hand, although the submariner is not exposed to a watery environment directly, he faces isolation, enemy threat, and fear of equipment failure, lack of sunlight, day night and biorhythm disturbances, problems of closed space living with skills to operate highly sophisticated equipments. Both the groups tend to highlight differing behavioral characteristics.

AVIAN INFLUENZA IN INDIA

Dr (Wing Commander retd) Sampath K Krishnan

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Abstract

The first avian influenza outbreak in India in poultry occurred in Navapur taluk of Nandurbar district of Maharashtra and adjacent Uchal taluk of Surat district of Gujarat, between late January and early February 2006. Initially the large numbers of poultry deaths were attributed to Newcastle Disease but samples tested at HSADL (High Security Animal Diseases Laboratory) Bhopal, confirmed the outbreak to be due to highly pathogenic avian influenza. 15 of the 516 samples tested were positive for H5 N1.

Central and state rapid response teams (both from Department of Animal Husbandry & Dairying and Ministry of Health and Family Welfare) were dispatched to the affected blocks on 16th February and rapid containment measures (as per the previously prepared contingency plans of both ministries) which including restriction of movements, sealing of all poultry farms, culling of all poultry within a radius of 10 Km (with compensation), destruction of eggs and chicken feed, and other emergency measures including environmental sanitation.

All staff involved in the operations was under chemoprophylaxis (Oseltamivir) and wore PPE (Personal Protective Equipment) during the entire operation. Persons with upper respiratory symptoms were closely monitored and those with close contact with poultry were provided treatment with Oseltamivir and biological specimens (nasopharyngeal aspirates, throat swabs and sera) were collected and sent to National Institute of Virology, Pune and National Institute of Communicable Diseases, Delhi for ruling out infection from avian influenza. Out of 97 samples, none tested positive for the disease.

The outbreak was successfully contained and the lessons learnt from this outbreak viz. the advantages of preparedness, rapid response, culling instead of immunization of poultry, and effective containment measures under strict prophylaxis have been incorporated in the existing contingency plans of the government.

AVIAN INFLUENZA (H5N1) - THE WORLD HEALTH ORGANIZATION (WHO) PERSPECTIVE

Dr. Glenn Schnepf

World Health Organization

Abstract

The Global Access to HIV Antiretroviral Therapy Programme ("3 by 5") was launched in late 2003 and provided a strategy for ensuring treatment for 3 million people living with HIV/AIDS in low and middle income countries by the end of 2005. The "3 by 5" target was not reached, but positive steps were achieved with the increase from 400,000 to approximately 1 million people receiving treatment by the end of June 2005. However, there is reason to be hopeful that growth rates will continue to increase over time. The limitations and challenges of the "3 by 5" programme can be overcome with further WHO and UNAIDS guidance. WHO recommends increased political commitment, financial sustainability, human resources and supply management, integrating treatment and prevention programmes, as well as providing equitable access and the need for coordinating support and evaluation

of the “3 by 5” programme. While the WHO HIV/AIDS activities and resources that promote/facilitate greater cooperation between WHO and the militaries are limited, it is hoped that they will increase over time.

AVIAN INFLUENZA (AH5N1) SITUATION IN VIET NAM, 2003-2005

Dai, Bui (Major General)
Vietnam

Abstract

Since 2003, 3 epidemic waves of Avian Influenza AH5N1 were identified in Viet Nam, with 32 of 64 provinces affected. A total of 92 human cases and 42 deaths (CFR 32.8%) were reported. The first wave from 26 December 2003 to 10 March 2004, involved 13 provinces, with 23 cases and 16 deaths (CFR 69.6%). The second wave occurred from 19 July to 26 August 2004 and involved 3 provinces, with 4 cases and 4 deaths. The third wave started on 16 December 2004 and lasted to 30 November 2005, involved 25 provinces with 66 cases and 22 deaths (CFR 32.8%). In VietNam influenza AH5N1 occurs chiefly in delta regions and rarely in forest-mountainous areas. The north and south parts of VietNam were affected, with the highlands so far being spared. Most cases were reported in winter and spring: it often starts in November/December, bursts out in January-March and decreases during summer/autumn. The most affected age groups are from 0-5 to 30-39 (mean age 26). The third wave lasted longer, affecting more provinces, and caused more human cases. AH5N1 occurred sporadically in most provinces. The majority of human cases were exposed to infected poultry. Some family clusters of human cases were observed in several delta provinces. We could not determine whether the transmission was inter-human or from the sole avian source. Case-fatality rate decreased from the first wave to the third wave. This may be due to the improvement in early detection and treatment, the severity of the disease being milder or to some genetic changes of the virus. No clear evidence of human to human transmission is available, but its possibility should be considered. From the first wave to the third wave, there was an increase of the number of human cases, the number of affected provinces, the number of family clusters, and the number of human cases in each cluster. Some cases have no clear evidence of exposure to sick poultry. We will report on control measures which were implemented nation wide to combat the spread of avian influenza and suggested programmes of research.

THE U.S. MILITARY'S GLOBAL INFLUENZA SURVEILLANCE PROGRAM

Neville, James (Colonel)
United States

Abstract

The Department of Defense Global Influenza Surveillance Program began in 1976 and currently includes 43 sentinel sites around the world, all US military basic training centers, a number of ships afloat, and local populations in nations hosting US military medical research laboratories. By processing thousands of specimens annually, this network provides important virologic information that helps drive World Health Organization vaccine recommendations and other influenza prevention and control efforts within the US military healthcare system. The program is expanding capacity in response to recently heightened threats of pandemic influenza.

AVIAN INFLUENZA - A BIRD'S EYE VIEW

Gary Vroegindewey, Colonel
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Abstract

Avian influenza (AI) as a threat to human health and potential global pandemic has received a great amount of attention in scientific, political and news arenas. Less attention has been paid to the actual current epidemic as it relates to domestic animals, wildlife and the global food supply. Understanding the epidemiology of H5N1 in Southeast Asia poultry and wildlife and risk factors for spread facilitates control, mitigates human risks and improves risk communications. H5N1 first appeared in chickens in the live bird markets of Hong Kong in 1997 and is currently reported in Vietnam, Cambodia, Lao, China, Russia and Indonesia with India, Pakistan, Iran, Egypt, Myanmar considered at high risk. Control measures have resulted in over 100 million birds slaughtered and increased surveillance in both domestic and wildlife. The virus has been shown to infect wild birds and due to the migratory flyways has the potential to very readily spread through the Asian continent and possibly to North America. Differences in US and SE Asia production processes account for significant differences in risk to people and US flocks. Experience from the 2002 Avian Influenza outbreak demonstrates that in a North American style production system with high biosecurity, all in-all out movement, limited human interface, high commercial and governmental assistance AI can be contained and eliminated. Asian production models with live bird markets, small flocks, continuous replacement, low biosecurity and high human-livestock contact present a much greater challenge for livestock control and increase risk human disease.

DOD Veterinary Service concerns with AI include:

1. Zoonotic disease spread
2. Sustainment of operations
3. Restriction of movement of people and equipment
4. Restriction of movement of food and operational rations.
5. Decreased food sources for US troops
6. Support to USDA for eradication if HPAI introduced to the United States

MODELING EFFECTS ON ORGANIZATIONAL OPERATIONS OF A WIDESPREAD AVIAN FLU OUTBREAK

James R. Campbell, Captain (Retired), U.S. Navy, Richland, Washington, United States;
Robert T. Brigantic, Colonel (Retired), U.S. Air Force, Richland, Washington, United States

Abstract

We have developed a predictive model to test the robustness of organizational vision/mission based on specific organizational operations models, under various conditions of H5N1-induced stress. Incidence curves from any epidemiological model of infectious disease spread can serve as input into

priority operational models via a unique “plug and play” interface, to predict downstream effects on operations. Our model does not address primary effects such as morbidity and mortality or medical surge requirements, but rather focuses on secondary effects such as degradation of operational tempo, tertiary effects such as ability to conduct surveillance for disease spread or mitigate disease outbreak; ability to provide assistance to affected regions or protect health and safety of personnel; potential effects on business volume; or ability to execute assigned missions. The model is scalable - applicable to large organizations like military combatant commands, State Departments of Health, foreign Ministries of Health and smaller NGOs, and commercial businesses down to individual departments. It is robust - predicts the effects on military operations as well as on civilian public health operations. It is unique - accurately predicts the downstream effects of infectious disease outbreaks on operations.

CURRENT UPDATE ON AVIAN INFLUENZA

COL Michael Brumage
Tripler Army Medical Center

Abstract

The presentation will include graphs and maps showing the latest information on the spread of H5N1 Influenza A across Asia and Europe with attention to the latest hotspots of disease among humans and birds. The presentation will also focus on unusual therapies as well as non-pharmacologic measures, which may be of use in ameliorating H5N1 human influenza in the absence of antiviral medication and vaccine.

DEVELOPING HIV AIDS PROGRAMME IN INDONESIAN ARMED FORCES

Commodore Imansyah Ali
Head of Medical Service, Indonesian Navy

Abstract

HIV / AIDS PREVENTION A SOCIO CULTURAL APPROACH FOR ENTIRE FAMILY

Col Pushkar Singh
Armed Forces Medical Services, India

Abstract

History has passed on certain values & strengths to our nation in terms of rich cultural heritage, multi-ethnic & multi-religious society. Despite several invasions, Indian culture has not been abrogated but has prospered through the assimilation of such conquering cultures. Cultural approach in health utilizes culture as a lens through which one can gain a greater understanding of individual and collective health behaviors, and a means to formulate prevention programs within a specific cultural context. Conventional prevention & health promotion techniques do not respond to dynamic socio-cultural realities. The socio-cultural approach utilizes & revitalizes local cultural forms of expressions & channel of communication & builds enthusiasm, solidarity, and empowerment within the community against the health problem. In most communities in India, a very high value is placed on the virginity of the bride at first marriage. Widowhood amongst Hindus is strongly associated with inauspiciousness while a widower faces no such difficulties. After marriage a woman is expected to be faithful to her husband while digressions by the man are overlooked. Women are rendered more vulnerable due to lack of knowledge and lack of control over their bodies to sexual violence within marriage. The issue is further complicated by the "culture of silence" where the women can't talk on sex related matters & hides any illness thereof. It has been found all over the world that circular migration has led to increase in the spread of HIV/ AIDS. As these young men leave their wives behind, they often form relationships with other women in urban areas, which might be linked to peer pressure.

HIV/AIDS education in schools deals only with medical and biological facts, but real-life situations not covered & also no education is provided on referral services.

The yearning to change should come from within a community unfortunately this is not happening on a wide scale because discussions on sex are a taboo subject hindering implementation. In order for health educators to enhance their reach we need to utilise the reach of various spiritual gurus and heads of religious muths as they have a tremendous following. The major approach of prevention of HIV/AIDS at present is "condom centric". We need to break this barrier as our culture & society is not so sensitive towards condom use as compared to western countries. The present ABC approach to prevention & control of HIV/AIDS is not on much different lines from the socio cultural aspects of prevention and there is a need to inculcate all approaches to fight this scourge. The emphasis is yet again on "Each one-teach one", but the message now is one on, which many a life depends.

HIV AIDS IN CHINA

Col Huang Shaoping

Abstract

DETECTION OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 (HIV1) A/AE CIRCULATING RECOMBINANT FORM (CRF) IN INDIA: POSSIBLE IMPLICATIONS

R M Gupta, Prof. Pradeep Seth , Dr. VVSP Prasad, Lt Col AK Sahni, Col J Jena
Armed Forces Medical Services, India

Introduction

HIV-1 strains develop marked sequence differences in their genome over the course of an epidemic and also in individuals infected. This is because of the error prone Reverse Transcriptase (RT), which rapidly incorporates mutations resulting in genomic diversity. The reverse transcriptase enzyme is known to be highly recombinogenic. As a result, radically different genomic combinations may be generated in individuals infected by genetically diverse viruses that have mosaic genomes.

Material & Methods

Whole blood sample was collected from 25 HIV1infected patients. DNA was isolated from the patients' PBMCs. Full-length gag gene was amplified. PCR products were subjected to direct automated sequencing. For identification of recombinants Simplot version 2.5 was used.

Results

Out of 25 gag genes that were sequenced, the gene amplified from a 29 years old HIV-1 seropositive male revealed a putative recombinant sequence. This sequence showed maximum homology with HIV1 subtype A. Simplot analysis revealed the sequence to be a likely recombinant with the following composition: Initial stretch of 1 to 200 nucleotides representing AE CRF, 201 to 440 nucleotides representing HIV1 subtype A, 441 to 660 nucleotides representing AE CRF again, 661 to 700 nucleotides representing HIV1 subtype A and the remaining stretch of the nucleotides from 701 to 1076 representing AE CRF.

Conclusion

We document a putative HIV1 subtype A/ AE CRF. It is of paramount importance that we keep a regular track of the various CRFs that are being generated and horizontally spread in the community. This has significant implications for development of candidate vaccine for India.

Keywords: HIV-1; CRF

FLIGHT SURGEONS: CHAMPIONS OF PATIENT SAFETY

Tony Austin, Air Vice-Marshal
Royal Australian Air Force, Canberra, Australia

Abstract

The traditional role of the military flight surgeon is to maximize the effectiveness of aircrew by providing specialised medical support. To be successful this support combines sound clinical skills, a good understanding of preventative medicine, a solid grounding in the applied physiology relevant to military aviation and mastery of the human factors that promote successful mission completion and flight safety. There is a growing literature showing that many patients are actually harmed, if not killed, by the unintended consequences of receiving health care, especially when admitted to a hospital. The factors that result in these adverse outcomes are identical to those seen by flight surgeons in the practice of their craft. I propose that military flight surgeons are ideally trained and experienced to become leaders in the fight to improve patient safety.

CURRENT ISSUES IN OPERATIONAL AEROSPACE MEDICINE WITHIN THE U.S. PACIFIC AIR FORCES

Schall, David (Colonel)
United States – Hawaii

Abstract

US Air Forces Pacific Command supports a variety of aircraft platforms and missions throughout the region. The author will present an overview of current issues within the Command, which include Aeromedical evacuation support over immense distances, hyperbaric rescue and transportation, management of the redeployed aircrew and suicide prevention. The author will also review the USAF modular support packages that can be uniquely configured to respond to a wide variety of contingencies.

Objectives:

- 1) Understanding of Aeromedical movement over long distances
- 2) Understanding of modular support to contingencies
- 3) Understanding of redeployment issues in support of aircrews

OPERATING SCHEDULES FOR SUDDEN INDUCTION OF UN-ACCLIMATIZED OR PARTIALLY ACCLIMATIZED AIRCREW FOR AIR OPERATIONS AT HIGH ALTITUDE

Gp Capt Pankaj Tyagi
Armed Forces Medical Services, India

Abstract

Indian Air Force is the first Air Force in the world, to have all types of sustained air operations for long periods, from high altitude airfields and helipads. Existing instructions on "Effects of cold and high altitude and their prevention" do not cater for fighter, transport, helicopter aircrew and supporting airmen aircrew operating in and out of high altitude airfields. A prudent policy with clear-cut directives is required to seize the issues involving the safety of the un-acclimatized aircrew, required to operate at high altitudes for operational reasons. The situations which require solution are sudden induction of Fighter, Transport, Helicopter aircrew to high altitude on detachment, Transit aircrew that arrive at high altitude for a short period of time, Transit aircrews that are forced to stay at high altitude for more than normal required period, Aircrew permanently based at high altitude and Personnel on detachment to high altitude.

An analysis of the statistics of HAPO cases in Armed forces to decide the maximum safe period that an un-acclimatized individual can spend at high altitude, on being inducted by air was conducted at WAC. Cases were taken from HMRC Leh and from the database at AFMC Pune to ascertain the minimum period for development of HAPO symptoms. Present statistics cannot give the time period in hours but it is confirmed that unsatisfactory acclimatization induces HAPO even on the first day of induction.

The recommended Operating Schedules for sudden induction of un-acclimatized or partially acclimatized aircrew and the basis of recommending the schedules to IAF have been discussed in this paper.

HOW THE USAF PREPARES HER MEDICS FOR WAR - A HISTORICAL PERSPECTIVE

Kim, Tony (Major)
United States

Abstract

Medical Care during war has changed dramatically over the decades. I intend to discuss the evolution of US military medical care in times of war since WWII. After a brief discourse on some historical notes, I will discuss the current USAF strategy to prepare its medics for war. Specifically, I will explain the AEF cycles and how medics participate in that deployment cycle. With that in mind, I will discuss the preparations that are made for each AEF cycle and detail the mandatory training that occurs prior to deployment (e.g. EMEDS, CSTARS). In addition, I will discuss how medevac/aerevac has changed over the decades and how increased capabilities (including the evolution of CCAT over the years) have allowed for far quicker transport of critically ill patients out of theatre.

POLYMICROBIAL INFECTIONS IN AIDS OUR EXPERIENCE WITH NEEDLE NECROPSIES

Col S Satyanarayana, Col AT Kalghatgi, Brig SK Nema
Armed Force Medical Service, India

Opportunistic infections ranging from viruses to parasitic infestations are known during the course of acquired immune deficiency syndrome. The type of opportunistic infections depends on the environment in which the patient is present and the diseases endemic to the environment. This study highlights the incidence of terminal polymicrobial infections detected in AIDS in India. This data is essential for the clinician so that such infections can be suspected and managed in cases of AIDS.

Needle necropsy was carried out in 54 cases. The aspirates were studied for cytomorphology, histomorphology and cultures (bacterial, mycobacterial and fungal).

Polymicrobial infection was found in 35.18% cases. All the agents were either disseminated or caused invasion of deep organs. Four infectious agents were present in 4 cases, 3 in 4 cases and two agents were responsible for death in 12 cases. Clinically unsuspected infections were detected in 43% cases. Smears were found to be more useful and gave indication of the organism than cultures in 65% cases.

Needle necropsy is a useful and safer alternative to conventional autopsy. Cryptococcosis and candidiasis should be suspected when a patient presents with clinical presentation as *pneumocystis carinii* infection and does not respond to conventional therapy. Based on these findings a therapeutic protocol can be made to cater for the common opportunistic infections in this part of the world.

AN EPIDEMIOLOGICAL INVESTIGATION OF AN OUTBREAK OF VIRAL HEPATITIS

Brig SK Handa, Lt Col A Banerjee (Retd), Lt Col PMP Singh
Armed Forces Medical Services, India

Abstract

From first week of Mar 2003 there was a rise in the number of Viral Hepatitis cases in a regimental training centre. Around second or third week of Mar 2003 it was suspected that there was an epidemic of Viral Hepatitis which was later confirmed by epidemiological investigations. The clinical case sheets and preliminary investigation carried out in the local MH were reviewed by the field study team. A cross sectional descriptive epidemiological study was undertaken. A detailed site survey was done with exploration of suspected sewage and water pipelines. A total of 36 cases occurred from 06 Mar 2003 to 04 Apr 2003. There was clustering in time and space suggesting common source epidemic. 36 serum samples were transported in cold chain to virology laboratory Armed Forces Medical College, Pune and tested for IgM anti HEV antibodies by micro capture ELISA. All the 36 samples (100.00%) were found positive for IgM anti HEV antibodies. Exploration of the water pipelines revealed sewage contamination due to leak in the pipeline as this was passing close to the sewage line. The overall attack rate was 1.44%. The outbreak of Viral Hepatitis in the regimental training centre occurred due to sewage contamination of drinking water pipeline.

PLASMA PRIMAQUINE CONCENTRATIONS FOR RADICAL CURE OF PLASMODIUM VIVAX MALARIA

Snr COL Vu Quoc Binh

Abstract

Primaquine is the only drug available for the radical cure of *Plasmodium vivax* malaria and in special situations the USA Control of Disease and Prevention recommend it for prophylaxis against malaria infections. The spread of primaquine-tolerant strains of *P. vivax*, particularly in Southeast Asia and the western Pacific region has led to the standard primaquine dose increasing from 15 mg to 30 mg daily for 14 days to prevent relapses. Prophylactic studies of primaquine in Indonesia and Colombia have demonstrated 30 mg primaquine daily to be well tolerated in G6PD normal individuals and to have a prophylactic efficacy of > 90% against both falciparum and vivax malaria. A distinct feature of primaquine is that it prevents malaria by attacking liver-stage parasites and thus prolonged prophylaxis after leaving a malarious area is not required; 7 days for primaquine compared with 28 days for Malarone, doxycycline and mefloquine. As with all drugs, knowledge of the pharmacokinetics (absorption, metabolism, distribution and elimination) of primaquine is most useful in optimising the dose regimen and also for establishing the pharmacodynamics of the drug, which focuses on the relationship between blood drug concentrations and parasitocidal effect. Limited data are available on plasma primaquine concentrations and its major metabolite, carboxyprimaquine for radical cure and prophylaxis. In the present study, we report on the pharmacokinetics of primaquine and carboxyprimaquine in healthy male and female Vietnamese soldiers following 30 mg primaquine daily for 14 days. We also compared primaquine concentrations in healthy volunteers and malaria patients with *P. vivax* treated with high-dose primaquine (22.5 mg twice a day) for 7 days. The latter investigation revealed that malaria alters the disposition of primaquine and its metabolite.

VIRAL GASTROENTERITIS SURVEILLANCE IN BIG DECKS: THE FIRST 22 OUTBREAKS

Scott Thornton, Lieutenant Commander
U. S. Navy, Pearl Harbor, United States;

Abstract

Monitor Navy big deck vessels for outbreaks (OB) of viral gastroenteritis and characterize the etiologic agents. After numerous reports of presumed or confirmed viral gastroenteritis (VGE) OB aboard deployed Navy ships appeared, a DoD-GEIS sponsored surveillance project was conducted from 1999-2004 to study the dimensions of the problem. The most common agent in U.S. civilian and cruise ship outbreaks is Norovirus (formerly Norwalk-like virus). Recent advances in molecular technology have led to the potential for on-site confirmation of the virus by Navy FD-PMU labs. Each of the 24 big decks - aircraft carriers (CV/N) and amphibious assault ships (LHA/D) was asked to accept a box of specimen collection supplies and OB survey forms. Once an OB of >25 cases/ week of vomiting and diarrhea began while underway, they were to collect stool specimens from patients. The viral agent could be confirmed by RT-PCR aboard ship (by Navy Environmental Preventive Medicine Unit (NEPMU) personnel) or later after returning from deployment. Further characterization by genotyping was done by Cincinnati collaborators. A total of 16 ships reported 22 major OB from AUG 1999 through 2004. Many OB began after port visits to Singapore or Phuket, Thailand, but some

occurred in U.S. waters. An additional six OB were not included as they either: affected <1% of the crew, ship was not underway, or lack of OB data. For ships reporting VGE cases, a total of 5463 cases presented to Medical, with average OB being for CV/N: 268 cases / 5.6% Attack Rate/ duration of 25 days; and for LHA/D: 137 cases / 5.4% / 21 days. Largest OB had 757 cases; highest single day was 180 new cases (different OB). Almost every OB occurred with the ships carrying full personnel complement. Stools were collected from 10 OB and all OB had Norovirus confirmed. New strains were detected in some OB, in both Genogroups I and II. VGE OB represented the major type of diarrheal OB seen aboard Navy big decks during this period. Although specimens were collected in less than half the OB, all indicated Norovirus was the causative agent. The diversity of strains may indicate the worldwide sources of these strains, unlike studies concentrating on one part of the globe.

THE SAF EXPERIENCE IN PROVIDING RELIEF AID TO NIAS

Lieutenant Colonel (Dr.) Steven Thng

Abstract

An earthquake measuring Richter Scale 8.5 occurred in the Indian Ocean off the West Coast of Sumatra on 28 March 05. The island of Nias was badly affected by the earthquake with significant damages to the buildings and loss of lives. SAF deployed a medical relief team of 31 personnel into the disaster area within 24 hrs to provide acute resuscitative, triage and evacuation services for the casualties of Nias. This paper aims to provide an overview of the work done by the SAF medical relief team with specific focus on lessons learnt from the deployment in response to the earthquake. The team had 33 personnel of which 19 were medical personnel. The team was assembled and deployed within 24 hours of earthquake and consisted of 6 medical officers, 1 nursing officer, 4 senior medics, 5 medics, 3 public health workers. Most urgent needs identified by the advance party for the acute stage is in the area of resuscitation and evacuation and as such, the medical facility functioned as a casualty resuscitation, triage and regulating point for evacuation of all casualties to Medan or the Gunung Sitoli hospital. This role was greatly aided by the deployment of the Chinooks detachment. A total of 1188 casualties were managed by our medical facility in the 1 week of which 10% were evacuated to Medan. In the initial period of deployment, the cases were mainly traumatic injuries related to the earthquake and subsequently, the types of cases seen were mainly primary healthcare related due to the breakdown in public health system and lack of local health infrastructure. Many lessons were learnt throughout the deployment. The significant ones include the need to deploy as early as possible so as to meet the greatest need of the casualties. The importance of careful team composition selection as well as medical logistics constitution cannot be overemphasized. As we were functioning mainly as a triage and regulating point for evacuation out of Nias, the importance of careful tagging of casualties without identity cards, keeping track of casualties evacuated as well as working closely with the local authorities to provide support for casualties evacuated all resulted in the smooth functioning of the medical facility. The week long deployment into the earthquake torn Nias was a successful one in terms of meeting the needs of the local population. The early deployment ensured that the greatest need was met and working hand in hand with the Chinooks detachment enables us to reduce mortality and morbidity of casualties sustained during the earthquake.

36TH CONTINGENCIES RESPONSE GROUP PACAF MEDICAL RESPONSE TO LEYTE LANDSLIDE

Major Wesley Palmer
United States Air Force

Abstract

This presentation will be a case report of the US Air Force response to the humanitarian relief effort in Leyte, Philippines in February 2006. The efforts, organizational structure, and employment of the 36th Contingency Group and in particular its medical division will be discussed. Of focus will be the establishment of the aerial port facility in Tacloban to handle personnel, equipment, and supplies necessary to the relief effort. The aeromedical evacuation of a survivor and a brief primary observational analysis of the displaced persons situation will be discussed along with challenges encountered and lessons-learned.

OPERATION PAKISTAN ASSIST

Group Captain Amanda Dines
Australian Defence Force

Abstract

Operation Pakistan Assist is the Australian Defence Force's Humanitarian Assistance Mission to Pakistan following the devastating earthquake in 2005. At the request of the Government of Pakistan, an Australian Defence Force Primary Health Care Team with helicopter and logistic support deployed to Dhanni in the Neelum Valley some eight weeks after the initial earthquake. The challenge was to provide culturally acceptable care to a community that had been severely affected by a natural disaster.

Initial health planning used the Sphere Humanitarian Charter and Minimum Disaster Response, and the WHO Humanitarian Emergency Guidelines to shape a military Level 1 health care element to provide effective humanitarian care. WHO donated a 'New Emergency Health Kit', which allowed medical staff to provide appropriate treatment and instructions. Immunisations were provided as part of the Government of Pakistan Immunisation program. The health team worked with local military units and health care providers.

Care focussed on primary health needs and immunisation. The team saw up to 160 patients per day, 50% of whom were female and approximately 20% children under 5 years. Initially patients presented with medical conditions associated with the poor living conditions. These included respiratory infections, skin infections and gastroenteritis. The earthquake associated injuries were predominately old, where treatment was delayed or follow up treatment has not been possible after initial care.

As time went by, patients presented with a wider range of chronic conditions.

By shaping its health response for a humanitarian emergency, the ADF health team was able to make an effective contribution to the health of people in the Neelum Valley.

AIR EVALUATION VALIDATION CONCERNS IN THE PACIFIC THEATRE

Lieutenant Colonel Jimmy Barrow

Abstract

This topical discussion will show the requirements of a Validating Flight Surgeon; this includes discussion of a patient's history and current condition as it relates to safety of flight for the patient and the safety of the crew. We will look at the Validating Flight Surgeons role in verifying the capabilities of the accepting facility and assuring that there is an accepting physician and facility. We will look at the broad expanse of the Pacific Theater and how it affects both the military patient and the humanitarian assistance patient movement. And finally we will review Flight Physiology as it relates to patient movement.

GOLDEN HOUR AND RULE OF TRAUMA

Lt Col Man Mohan Harjai
Armed Forces Medical Services, India

Abstract

The Golden Hour is a term used in emergency medicine which refers to the first sixty minutes after an accident or the onset of acute illness. The victim's chances of survival are greatest if he or she can be transported to a fittest hospital within the Golden Hour and at the same time to recognize and treat the priorities "ABCDE" enroute.

Providing swift, life-saving care within Golden Hour is the Golden Rule. The patients of polytrauma could be saved if bleeding is stopped and blood pressure is restored within one hour. Surgical intervention within that one hour, therefore, is critical for increasing the patient's chance of survival. This hour begins the moment at injury occurs. The golden hour is further subdivided as first 20 minutes for discovery of incident and activation of Emergency Management System (EMS), next Platinum ten minutes for initial assessment and intervention by EMS, following Ten minutes for packaging and transport and last 20 minutes for initial hospital stabilization before surgery.

The golden hour can be summarized by the 3R i.e. the Right patient at Right place in Right time. The management of patients in very early post injury period, to improve the outcome is significantly proven and evidence based. These health care services are presently unsatisfactory and inadequate in our country. For a state trauma system to work, paramedics, ambulance services and other hospitals, from the largest metro hospital to the smallest community hospital, must be committed to getting the patient to the level one trauma center within the "golden hour".

PAKISTAN EARTHQUAKE DISASTER RELIEF

Erick Martell, Captain, U.S. Army, Heidelberg MEDDAC, Germany; Jeffery Dean, Major, U.S. Army, Heidelberg MEDDAC, Germany; Neil Vining, Captain, Landstuhl Medical Center, Germany; Vick Lebedovich, Colonel, Landstuhl Medical Center, Germany; John Verghese, Major, Landstuhl Medical Center, Germany

Abstract

Pakistan Earthquake Disaster Relief: Experiences from the 212th Mobile Army Surgical Hospital(M.A.S.H.) Situation: Rapid deployment of personnel from the U.S. 212th M.A.S.H. field hospital, LRMC, 67th CSH, 123rd MSB, USN engineers (Seabees), and the U.S. State Department, in conjunction with local and international NGOs to remote location in Kashmir Pakistan in response to major devastating earthquake (7.6 Richter) on Oct 8, 2005.

Location: Muzaffargarh (Kashmir), Pakistan

Mission: Provide immediate evaluation, triage and emergency medical and surgical care to earthquake victims. Coordinate and conduct patient ground and air evacuations to outlying facilities. Support host nation medical logistics. Assess local public health issues and initiate a medical civilian assistance program (MEDCAP).

Facilities: Fully mobile 84-bed hospital (24 ICU beds, 20 intermediate care beds, 40 minimal care beds), triage / emergency medical treatment section, mobile operating room with 2 operating tables, pre-operative evaluation area, CMS section, laboratory with blood bank, radiology with digital X ray imaging, pharmacy, outpatient care facility, and water purification center.

Activities: Three hundred ninety six operative procedures to include emergent laparotomies for trauma, cranial burr hole decompression, above and below knee amputations, upper extremity amputations, application of external fixations, open reduction and internal fixations, full and split thickness skin grafts, upper and lower extremity muscle flaps, soft tissue advancement and rotational flaps, hip disarticulation, escharotomies for burns, debridements and delayed primary closure of acute and chronic wounds, repair of perforated gastric ulcer, repair of liver laceration, subtotal thyroidectomies for goiters, cholecystectomies, orchiectomy for testicular tumor, umbilical and reducible/incarcerated inguinal hernia repairs. In addition, medical treatment given to more than 15,950 outpatients, approximately 500 inpatients, and over 16,000 prescriptions were dispensed. The preventative medicine initiative included administration of approximately 2,700 preventive vaccinations (1758 tetanus, 512 DPT, 52 DT, 354 MMR, 148 Polio). Also conducted approximately 109 air MEDEVACs to outlying facilities. Purification of over 400,000 gallons of water for the local indigenous population. Conclusion: A full spectrum of medical, surgical and public health care was delivered to earthquake victims in remote locations in Pakistan. In addition, the disaster relief efforts of the 212th M.A.S.H. enhanced the interoperability between the U.S. and Pakistani medical personnel.

COMPARATIVE STUDY ON THE EFFICACY OF THE PLEURAL DRAINAGE BY PIGTAIL CATHETER AND CHEST TUBE IN STABLE HEMOTHORAX DUE TO BLUNT TRAUMA

Col BNBM Prasad, SM, Lt Col D Bhattacharya, Col Chandra Mohan, SM,
Col V Ravishankar, Brig D Ganguly, VSM
Armed Forces Medical Services, India

Abstract

Drainage of Hemothorax by chest tube is the standard treatment. In stable cases where pleural needle aspiration is free, is it mandatory to initiate wide bore chest tube drainage. Pigtail catheter drainage appears attractive since this mode of drainage is effective in empyema, lung abscess and postoperative collections in joints. This study was undertaken to assess effectiveness and safety of small bore catheter drainage as compared with wide bore intercostal chest tube drainage in stable hemothorax.

In this retrospective study, stable cases of mild to moderate unilateral hemothorax caused by blunt trauma without pleural loculation, were drained either by 12F pigtail pleural catheter or by 32 F chest tube. On completion of drainage, each case was assessed by chest skiagram and spirometry monthly for next 6 months. Among 79 cases of blunt injuries to chest treated between 1993 and 2004, 47 fulfilled the eligibility criteria. Pleural catheter drainage was done in 24 of them, and was successful in 23 cases with 4 requiring additional catheter placement. The mean duration of catheter drainage was 5 days with mean drainage of 1100 ml. In one case, catheter drainage failed. Tube thoracostomy was done in 23 cases. It achieved adequate drainage in 21 cases with remaining 2, requiring additional catheter placement. The mean duration of chest tube drainage was 4 days with mean drainage of 1300 ml. Spirometric improvement and radiological clearances were almost similar in both groups at the end of six months. In tube thoracostomy group, 8 had wound infections, 4 had surgical emphysema

and all had pain. None drained by pigtail catheter had significant complications. Stable hemothorax can be adequately drained by pigtail catheter with results comparable to that of chest tube drainage. This novel method of hemothorax drainage by using pigtail catheter is not only cheap, safe and effective but is also well tolerated with insignificant morbidity.

RENAL TRANSPLANTATION PROGRAMME IN INDIAN ARMED FORCES

Colonel PP Varma, Col Tapan Sinha, SM, Lt Col A Kotwal, SM, Col GS Chopra, SM,
Col KV Baliga, Col A Hooda, Lt Col AS Sandhu, Col SC Karan, Wg Cdr GS Sethi
Armed Forces Medical Services, India

Abstract

In Armed Forces close to 900 renal transplants have been performed till date. Army Hospital (R&R) has performed 452 of them. All centers are following similar immunosuppressive protocol.

This paper gives the results of AH(RR). Of the 452 transplants performed here 306 (67%) of them were serving soldiers and the rest were their dependents. Mean age of the recipients was $33 + 9.35$ years (range 5-60 years) while the donor age was higher, mean age $42.10 + 11.51$ years (range 19-72 years) [$p=0.000$]. Seven patients (1.54%) received cadaveric transplant. Donors in other 445 patients were father in 13.7%, mother in 27.1%, Brother in 19.7%, Sister in 13.7% son in 1.8% and daughter in 0.9%. Spousal transplant formed 21.4% of all transplants, wife being donor in 17.4% and husband in 4%. 19.75% donors were marginal. Although 78.8% of recipients were males, majority of donors (61%) were females. Total of 31 renal grafts had multiple renal arteries and all of them had open donor nephrectomy. In 7.5% right kidney was harvested. Mean operation time for laproscopic nephrectomy was 184 minutes (120-300) and in open nephrectomy was 154 minutes (100-280). There has been no mortality among donors. Conventional immunosuppressive protocol is Cyclosporine, Azathioprine and steroids. MMF based immunosuppression was given in 28% of patients. Twenty two patients are receiving Sirolimus and 5 patients are on Tacrolimus based regimen. Three hundred fifty five (74.1%) patients have been analysed for graft, patient survival and other events since follow up data/records of the rest are not available. Mean follow up of these patients is for 2.55 years (range 15 days to 12.09 years). There were ninety six rejection episodes (28.6%) and 40 episodes (41.6%) required ATG/ALG for reversal. Despite free availability of immunosuppressants 10.4% of rejection episodes were due to drug non-compliance. Twenty two patients were found to have graft pyelonephritis (APN) when evaluated for acute graft dysfunction (16.6%). Thirty four patients (10%) have expired and cause of death in all of them was sepsis. Forty eight patients suffered from tuberculosis (16.8%) and 75% of them developed the disease during first two year of transplantation. Patients in MMF group were more susceptible ($p=0.006$) to develop tuberculosis. Those with HBV/HCV infection were survival was 95% and 96% respectively and projected half life of graft is 9.8 years.

VERTIGO IN SUBMARINE ENVIRONMENT- A MARINE EXPERIENCE

Surg Capt Emmanuel James
Armed Forces Medical Services, India

Abstract

The ear is the commonest organ affected/injured by exposure to altered barometric pressure. This is more so among our naval diving personnel who undertake tasks/missions in the subsurface marine environment. Injury altered stimulation of the vestibular system can often lead to debilitating vertigo in an alien environment heading to at times fatal consequences. A group of naval divers were studied for symptoms related to the vestibular system during different stages of diving in various conditions of temperature, light and depth. Factors affecting spatial orientation, proprioception, position and motion were incorporated and result observes, recorded and analyzed. A complete neurological test battery was applied to the divers before and after the diving event with them having to fill in a detailed questionnaire to elicit all possible related factors contributing to any vestibular dysfunction leading to vertigo under water. This study revealed that vertigo was indeed a serious concern among divers and did account for a significant number of aborted tasks/missions. It was also observed that years of experience, training, physical fitness and motivation directly contributed to the severity of vertigo when it occurred and the individual's capacity to deal with it. Environmental factors, equipment used by the divers and the extent of surface support and infrastructure played a very significant role in the occurrence and severity of vertigo and its control. Vertigo is a significant and deleterious symptom of vestibular dysfunction among divers and its prevention is of paramount importance. To optimize a divers capability and safety one needs to focus on motivation, physical fitness, and the training of our divers. Of equal importance is the incorporation of the latest and state of the art diving equipment in our inventory.

RAN HEALTH RESERVES; MEETING THE CAPABILITY CHALLENGE

Michael Garvan, Commodore, RFD RANR
Australian Defence Force, New South Wales, Australia

Abstract

The Naval Health Reserve (NHR) of the RAN has played an important role in operational health support since it was deployed to the 1st Gulf War in 1991. All manner of health professionals have been involved, the mix varying with different operations, and ranging from trauma surgeons to public health physicians and psychologists. The increasing tempo of deployments has revealed shortcomings in manning and training of the NHR personnel required to meet this demand. Increased recruiting of medical specialists has resulted from creation of a Specialist Reserve with shorter induction and more attractive conditions of service. Planning is underway to extend the Specialist Reserve model to include Nursing Officers with OT & ICU skills, and General Duties MOs qualified in trauma management. Recruiting targets have been lifted by an order of magnitude in order to create a pool

large enough to enable manning of rotation rosters without recourse to compulsory callout. While posting options are more limited for specialist reserve categories, the benefits of critical mass when demand surges occur are expected to offset the reduced flexibility in postings. Training of NHR personnel in skills & systems required for operational deployment has been unsatisfactory to date. However the recent transfer of Command & Control of the Primary Casualty Reception Facility(PCRF) to the Maritime Commander will, among other things, place the operational readiness training of the PCRF on a routine footing as part of the Fleet Training Program. For the NHR component of the PCRF this will mean, for the first time, exposure to essential training which is both planned and properly resourced.

SUBMARINE ESCAPE & RESCUE IN THE 21ST CENTURY

Dale Mole, Captain

U.S. Navy, U.S. Naval Hospital, Okinawa, Japan

Abstract Submarines operate in a hostile, unforgiving environment with little margin for error. While submersion has always been essential for operational effectiveness, the ability of a submarine to safely return to the surface is equally vital. Submarines sink primarily as a result of uncontrolled flooding. Those crewmembers surviving the initial incident must either effect immediate escape or take measures required to survive until rescue. Challenges to survival include increased pressure, toxic gases, limited oxygen, darkness, and hypothermia. With current technology, it is possible to escape from a disable submarine from depths as great as 180 meters. With current rescue vehicle design, rescue is possible to depths as great as 600 meters. Given the high cost of rescue systems, as well as the time and distances involved in conducting a successful rescue, international cooperation is absolutely essential.

AUGMENTATION OF PATIENT CARE AT SEA

Lieutenant Robin Barrett

Defence Health Services, Australian Defence Force (ADF)

Abstract

During the vietnam war the 'golden hour' was established as the benchmark to injury survival, which brought medical care closer to the front line of battle. Today the royal australian navy possesses the primary casualty receiving facility (PCRF) boasting a level 3 surgical capability that can be rapidly deployed with no setting up time required on arrival in the AO.

This poster will show the steps involved with creating an afloat inpatient facility and its subsequent rapid deployments.

DESIGNING VENTILATION SYSTEMS IN HOSPITALS

Lt Col SKM Rao
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Abstract

Control of airborne transmission of microorganisms in a health care setting is an important component of infection control programme. Ventilation systems have to be designed in such a manner that they ensure minimum microbial contamination especially in critical care areas like operation theatre, bone marrow transplant centre, intensive care unit etc.

The infection process may be thought of as a chain with three inter related components. In order for infection to occur, all three of these elements must be present. These are infectious agent, a means of transmission, and a susceptible host. Infection may be transmitted over short distances by large droplets, and at longer distances by droplet nuclei generated by coughing and sneezing. Droplet nuclei remain airborne for long periods and may disseminate widely in an environment such as a hospital ward or an operating room and can be acquired by patients. Directly fresh filtered air, appropriately circulated will dilute and remove air borne bacterial contamination. High-risk hospital areas (operating rooms, nurseries, intensive care units, oncology units, bone marrow transplant units and isolation rooms) should have air with minimal bacterial contamination. An HVAC system includes an outside air inlet or intake, filters, humidity modification mechanism, heating and cooling equipment, fans, ductwork, air exhaust or, outtakes or diffusers or grills for proper distribution of the air. Centre for disease control and prevention (CDC) recommend the following engineering controls to reduce the microbial contamination of the air. Local exhaust ventilation ie. Source control, general ventilation, and air cleaning. Air cleaning is achieved through various types of filters. Low medium efficiency filters can be placed in first bank of filters. Incoming air then gets mixed with re-circulated air and reconditioned for temperature and humidity before being filtered by second bank of filters, which consists of high efficiency filters. These remove particles of 1-5 microns in diameter effectively (90% efficiency) from air. HEPA filters are at least 99.97% efficient for removing particles of >0.3 micron diameter. Examples of patient care areas where these are indicated are protective environment room and those operating rooms designated for orthopedic implant procedure. Ultraviolet irradiation is effective in reducing transmission of bacteria and virus but has minimal effect on fungal spores. Microbiological air sampling should be limited to assays for air borne fungi, because of their pathogenicity in immunocompromised hosts. Demolition, construction and renovation activities generate considerable dust and debris that can contain airborne microorganisms and ventilation systems needs to be designed to contain damage caused by these activities. Maintaining prescribed air changes per hour, adequate filtration, maintaining correct pressure differentials in airborne infection isolation rooms, positive environment room and ultra sterile zone of OT; source control for contaminants are some of the essentials in designing a modern ventilation system for hospitals. In developing countries like India more emphasis should be laid on periodic preventive maintenance in terms of regular inspection of ventilation system eg. carrying out smoke test, manometer reading for filters, identifying leakages in the system, cleaning of filters, checking power backup for the air conditioning.

DEVELOPMENT OF A MICRO-COOLING SYSTEM TO MITIGATE HEAT STRESS IN ENCAPSULATED SUITS

Law, Lydia (Ms.)
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Abstract

Context: Operating in encapsulated suits impose a high degree of heat stress on the user. This will increase their risk of heat related ailments and affect their performance. Cooling systems are hence required to mitigate the problem of heat stress.

Aim: The aim of the study was to evaluate the effectiveness of the Micro Evaporative and Conductive Cooling System (MEVACCS) in the mitigation of heat stress in encapsulated suits.

Study Design: The MEVACCS comprises of the Evaporative Component (EC) that delivers dehumidified air into the suit, and Conductive Component (CC) that circulates ice water through a vest to the upper torso. The study tested N=18 military volunteers, each serving as their own control. The trial conditions were (a) without any cooling system (NC); (b) blower that introduces ambient air (BL); (c) EC only (EC); (d) complete MEVACCS (MEV). Subjects walked on the treadmill at 3.5 km.h⁻¹, 5% gradient for 3 cycles of 30 minutes walk with 30 minutes rest, in a controlled environment (33°C, 70% Rh, 850 W.m⁻² simulated solar radiation).

Results: The complete MEVACCS was distinctly superior to the other cooling systems. It controlled the level of heat strain to a mean T_{re} of 38.1°C. Peak differences between the MEV and EC, BL and NC were 0.8°C, 1°C and 2°C higher respectively. Levels of heat storage were lowest in the MEV (291.5 ± 71.9 W.m⁻²), followed by EC (345.8 ± 100.6 W.m⁻²), BL (351.0 ± 102.5 W.m⁻²) and NC (522.8 ± 120.0 W.m⁻²). The MEV also resulted in lower heart rates and increased work tolerance. The advantage of the EC over the BL was not as distinct as with the MEV, but perceived thermal comfort of the subjects was much higher than the latter condition. In addition, the EC unit managed to prevent fogging of the facemask.

Conclusion: The study showed that the MEVACCS, used with the EC unit alone, or together with the CC component, was able to dissipate more heat compared to the BL system. This was not only expressed in the form of lower core temperature, but better work and heat tolerance, perceived thermal comfort, and prevention of mask fogging.

HYPOHYDRATION ON EXPOSURE TO HEAT STRESS AND INTERVENTION WITH ERGOGENIC FLUIDS

T.P Baburaj, Gulab Singh, A.C Bajaj, Abhishek Bharadwaj, U S Ray, G Ilavazhagan, P.K Banerjee. DIPAS, DRDO, India

Abstract

Nearly half of the Indian subcontinent is arid or semi-arid. The coastal areas of Bay of Bengal and Arabian Sea pose high humid heat and the 'Thar' desert of the subcontinent has arid climate with hot dry conditions. A large population of military personnel has to execute their duties in these conditions. Studies carried out by DIPAS in the areas of heat acclimation and fluid replenishment revealed that hypo-hydration beyond 2% of body weight reduced mental and physical work capacity.

To ameliorate the consequences of heat stress and hypo hydration by providing ergogenic fluids,

studies were undertaken on 'ethnic fluids' in vogue in different parts of India (Brahmi Fluid: *Baccopa monera* and *Centella asiatica*, Nanari fluid: *Hemidesmus indicus*). With these, two more commonly used branded drinks (Electral and Rooh-afza) and plain water was also tested. The Latin square design was used for the study protocol in which 5 different fluids were tested on 5 volunteers for 5 different days of exposure for hot humid condition (34°C WBGT, RH 60%) in Human Climatic Chamber (HCC). After incurring 2% hypo-hydration by exposing the subjects in HCC, the replenishment fluids equivalent to 1% of body weight were administered. Thereafter, they performed 'standard work heat test' for 60 minute, which included initial 20 min rest followed by 40 min sub-maximal exercise on a bicycle ergo meter (60 Watt). The thermal strain indices were monitored during the period. Sweat loss for the entire period of 60 min was also noted.

The results showed no significant differences in thermal strain responses with replenishment of experimental fluids vis-à-vis the active control of plain water. However, with 'Brahmi' replenishment fluid the mean core temperature and sweat rate values were found to be the lowest as compared to others.

A COMPARISON OF THE EFFICACY OF HEAT ACCLIMATION UNDER HOT-WET OR HOT-DRY CONDITIONS

Ms. Joselin Lim

Defence Science Organisation Singapore, Singapore

Abstract

Context: One of the limitations in military operations is the ability to regulate body temperature when operating in hot climates. A commonly used method of heat stress mitigation is heat acclimation (HA). The climate locally is hot and humid while other regions where military exercises may occur have hot and dry climates. Thus, it is necessary to investigate if HA programs carried out locally are sufficient to prepare soldiers for exercises in other regions.

Aim: The aim of the study is to investigate the effects of HA on thermoregulation in SAF servicemen under hot-wet or hot-dry climatic conditions.

Study Design: The study involved 20 male volunteers from the SAF. The 2 HA conditions were: Hot-dry (40°C, 30% rh) and hot-wet (36°C, 65%rh). All volunteers went through heat stress tests (HST) before HA and after 8 days of HA. Rate of rise of core temperature (ROR_{tc}) during HST was measured.

Conclusion: The HA programme is applicable to both hot-wet and hot-dry climatic conditions. For the hot-wet condition, the programme can be implemented under local conditions. For hot-dry condition, which appears to require more efficient thermoregulation apparent from the increased efficacy of HA; the first phase of the programme can be undertaken in local conditions, followed by the second phase under overseas conditions.

U.S. AIR FORCE DEPLOYMENT HEALTH PROGRAMS

Colonel William G. Courtney
U.S. Air Force

The US Air Force (USAF) has several programs that assist commanders in maintaining peak medically ready to deploy status in their troops. The first is the Individual Medically Ready program which tracks the status of critical laboratory values, dental status, immunizations, disqualifying profiles, key equipment, and annual preventive health assessments for each member - both for individuals and at unit (and higher) levels. The USAF also operates a physical fitness program, as well as other preventive medicine and wellness programs, to not only enhance mission success but to facilitate longer healthier lives for its members. Additionally, every deploying member is evaluated prior to a deployment for medical issues relevant to the deployment as well as briefed on local health hazards and means of avoiding illnesses. Preventive medicine teams are deployed with units to maintain health surveillance, identify and prevent disease outbreaks, assure safe food and water, and mitigate local and inherent health hazards. Additionally the USAF has a formal program to assess and address the health concerns of its members upon redeployment. These programs were developed from gaps and lessons learned from previous engagements, and have been successful.

THE ADAPT PROJECT: MODELLING PILOT ACCOMMODATION AND TASK PERFORMANCE

James Ross, Group Captain, Royal Australian Air Force, Canberra, Australia; Tim Olds, Professor of Human Movement at University of South Australia, Adelaide, Australia; Peter Blanchonette, PhD, Defence Science and Technology Organisation, Melbourne, Australia; David Stratton, PhD, University of Ballarat, Victoria, Australia

Abstract

The size and shape of humans have been changing dramatically over the last 100 years. People have grown taller and fatter, with relatively longer legs and higher waist-hip ratios. Aircraft, on the other hand, are often designed to last for several decades. Consequently, there is an increasing mismatch between the size and shape of crewstations and the size and shape of aircrew. This mismatch has been exacerbated by the introduction of female aircrew. This is particularly true in Australia, where the most recent anthropometric survey dates from the 1970s, and crewstations are designed based on overseas specifications. In the past, anthropometric surveys have been conducted with the traditional instruments of tape measures and calipers. The Australian Defence Anthropometric Personnel Testing (ADAPT) project is taking a different approach, using a combination of 3D whole-body scanners, laser scans of crewstations, human modeling and animation software, and mathematical optimisation, to refine anthropometric recruitment standards for the RAAF. The project will additionally improve clothing and equipment fit, human functionality in aircraft, reduce the risk of injury and provide the opportunity to open recruitment to a wider selection of applicants. The work done in the ADAPT project has applications across the ADF, and will spill over into many civilian fields.

AIRCRAFT SIMULATOR BASED SPATIAL DISORIENTATION PROFILES

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Abstract

Spatial disorientation (SD) is an aviation hazard that costs air forces worldwide a high price in aircraft and immeasurable human toll. Analysis of mishaps demonstrates that SD is a cause of significant human factors mishaps with a disproportionate percentage of these mishaps resulting in fatal collision with the ground. Training programs designed to mitigate the threat of SD have traditionally considered only type II recognized and type III incapacitating disorientation illusions. Empirical analysis demonstrates that the majority of fatal SD mishaps are caused by type I unrecognized spatial disorientation. Because these illusions are below the threshold for human perception, the pilot does not recognize his/her unusual attitude and is unable to maintain an intended bank angle. Because the illusions responsible for type I SD are sub-threshold and therefore un-perceived, it follows that training programs can be developed, without motion, to mitigate these threats. Many if not all unrecognized SD mishaps include an anomaly of attention, such as distraction or channelized attention. Clearly these task management errors contribute to the mishap by delaying the recognition of unusual attitude which would normally occur with an adequate instrument cross check. This briefing will discuss simulator based scenarios in non-motion aircraft simulators which include task management issues in combination with unintentional aircraft overbank. These simulator based SD scenarios improve the fidelity of spatial disorientation training and the likely pilot acceptance of SD training.

USAF AVIATION FATIGUE MANAGEMENT PROGRAM

Joseph Anderson
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Abstract

The US Air Force (USAF) Aircrew Fatigue Management Program has been successful for many years in reducing mishaps due to fatigue while ensuring safe mission completion. The USAF uses a three-pronged approach of Operational Scheduling, Non-Pharmacological/Behavioral Adaptation, and Pharmacological Adjuncts. Emphasis on crew rest and crew duty day requirements, along with Operational Risk Management tools, allow direct commanders to conduct sustained around the clock flying operations while minimizing short- and long-term aircrew fatigue. Ongoing educational efforts by flight surgeons and aerospace physiologists re-enforce non-pharmacological and behavioral adaptation techniques such as good sleep hygiene, healthy diet, stress management, and exercise programs. As a last resort, the flight surgeon has a variety of safe and effective "Go and No Go Pills" available for prescription to aviators. This last prong has proven to be very well accepted by aircrew, with no recently reported complications associated with medications of a by-gone era. Especially during sustained combat operations, the USAF Fatigue Management Program continues to enhance mission success while maintaining aircrew health and safety.

NEED FOR ENTOMOLOGICAL SURVEILLANCE IN THE INDIAN ARMED FORCES: AN APPROACH PAPER

Dr Rina Tilak, Col R Bhalwar , Col A Datta
Armed Forces Medical Services, India

Abstract

Arthropod vectors and pests of medical importance pose one of the greatest threats to military forces world wide. The vectors and the diseases caused by them have severely impacted the success of a large number of military missions in many instances. The armies of the developed nation's viz. US and UK already have in place an active surveillance team which is tasked to routinely generate and update information on vectors and pests of military importance and the infectious diseases pertinent to the troops in their area of deployment.

However, in the Indian Armed Forces, there is no surveillance system in existence, though rudimentary data is generated by Station Health Organizations (SHO), given their meager resources. There is thus, a need to establish a surveillance system in the Indian Armed Forces, to generate baseline data for forecasting of risks faced by troops prior to their deployment so that preventive measures can be undertaken and also to monitor changes in vector/ pest densities as a forewarning of any biological warfare activity in the area. As a prelude to the idea, a small project on mapping of vectors of defence importance was undertaken in two cantonments of Pune. The project focused on training of the Armed Forces personnel (one of the stumbling blocks in undertaking such surveys), indigenous development and fabrication of equipment required for the purpose and mapping of vectors in different seasons and preparation of database of the vectors in the two study areas.

The study reports presence of 17 species of mosquitoes comprising 6 species each of Anopheles and Culex, 3 species of Aedes and a single species of Armigers and Mansonia from the two cantonments of Pune and Kirkee. The findings also reveal the presence of Rhipicephalus sanguineus, Xenopsylla cheopis and Leptotrombidium deliense; the vectors of Indian Tick typhus, Plague and Scrub typhus respectively in and around the two cantonment areas.

The importance of continuous monitoring of the vectors in an area is crucial, as it would indicate any abnormal rise in vector abundance, especially those that have biological warfare significance and will facilitate initiation of timely action or preventive measures. It is thus recommended, that a Surveillance Team be established, similar to such teams operational in the armies of the developed nations. It is a gigantic task, given the geographical boundaries of our country, but a beginning at the earliest is necessary, lest we are caught napping.

PILOT PROGRAM OR LABORATORY SURVEILLANCE FOR INFECTIOUS DISEASE THREATS TO PERUVIAN PEACEKEEPERS RETURNING FROM THE U.N. STABILIZATION MISSION IN HAITI

Justin S. Green, Lieutenant, U.S. Navy, Naval Medical Research Center Detachment - Peru; Paul T. Scott, Walter Reed Army Institute of Research, Retrovirology Division, United States; Christopher L. Perdue, Captain, U.S. Army, Walter Reed Army Institute of Research, Preventive Medicine Division, United States; Gloria Chauca, Naval Medical Research Center Detachment - Peru; Warren Sateren, Walter Reed Army Institute of Research, Retrovirology Division, United States; Alejandro Mercado, Comandante, U.S. Navy, Centro Medico Naval, Peru; Gregory J. Martin, Captain, U.S. Navy, Naval Medical Research Center Detachment – Peru.

Abstract

Background: Peacekeeping forces routinely deploy to regions of the world with endemic infectious diseases that may potentially infect troops and degrade mission effectiveness. Currently, Peru is a contributor of peacekeepers to the United Nations Stabilization Mission in Haiti (MINUSTAH), for which the Peruvian military provides groups of approximately 200 personnel deploying for six-month periods to Haiti.

During their time deployed, Peruvian personnel are potentially exposed to several infectious diseases that are endemic to the area, including but not limited to Human Immunodeficiency Virus (HIV) types 1 and 2, Human T-Lymphotropic Virus (HTLV) types 1 and 2, Hepatitis A (HAV), B (HBV), and C (HCV), Dengue Fever, Typhoid, Syphilis, Leptospirosis and Malaria. Peruvian military guidelines recommend pre- and post-deployment blood draws to assess for potential disease exposure as well as routine HIV testing. Due to the perceived high risk of infectious disease exposure, especially HIV, in Haiti, the Peruvian military invited collaboration with NMRC/WRAIR in testing blood samples to determine the incidence of infectious diseases during Peacekeeping Operations. **Methods:** We drew 10 mL of blood from and administered a post-deployment questionnaire to 193 deployed Peacekeepers as they returned from Haiti in early December 2005. We also obtained pre-deployment blood samples from the group of 203 that deployed to Haiti in late November 2005 and plan to collect post-deployment samples and questionnaires when these Peacekeepers return in May 2006. We are processing and testing these samples at NMRC facilities in Lima, with the exception of leptospirosis testing, which will be conducted at Brook Army Medical Center, San Antonio, TX. Based on the findings from the serological/whole blood testing and questionnaire responses, the project team will compile a report to explain the health risks related to deployment to Haiti as well as prudent preventive measures to protect the health of the peacekeepers. Individual peacekeepers are informed of the results of laboratory testing by the medical officer assigned to their unit through the coordination of the Infectious Disease specialist who has been assigned to act as a project liaison officer. Where appropriate, peacekeepers will receive additional diagnostic work and/or treatment for their illnesses within the Peruvian healthcare system. **Results:** Returning Peacekeepers self-reported that during deployment 91.7% (176/192) were bitten by mosquitoes daily, 25.4% (49/193) engaged in sex, of which 93.9% (46/49) stated they always used a condom, 23.3% (45/193) were injured, and 32.6% (63/193) had an illness during deployment. Post-deployment assays completed to date revealed newly diagnosed HIV in 0/193 (0%), ELISA positive HTLV in 4/193 (2%), and HBsAg positive in 3/193 (1.6%). Confirmatory tests for HTLV and HBV and complete testing for HAV, HCV, Dengue, Syphilis, Typhoid, Leptospirosis and Malaria will be completed by 15 February 2006. **Conclusions:** Peacekeeping missions are important contributions to the global community, but carry health risks to those deployed. Traditionally, threat assessments for military deployments have been accomplished using open source epidemiological data

from the WHO and host nations Ministries of Health. This program demonstrates a more accurate evaluation of health risks to peacekeepers based on surveillance data taken directly from deployed peacekeepers. These data provide a more realistic determination of the health risks to deployed military forces than can be surmised from interpretation of epidemiologic data in the local civilian population. Although the well known high risk of sexually transmitted diseases in Haiti, including HIV, were of great concern, this project has identified vector-borne illnesses as a potential high risk for Peruvian peacekeeping troops deploying to Haiti. The result of this project will be force health protection recommendations to the Peruvian Ministry of Defense to include personal insecticide use. Additionally, this pilot project can be replicated in other countries that deploy troops to areas with infectious disease

HIGH ALTITUDE PULMONARY OEDEMA SURVEILLANCE IN THE INDIAN ARMED FORCES

**Wg Cdr R Vaidya, Col Rajvir Bhalwar, Col AK Verma, Col A Datta,
Lt Col A Kotwal, SM, Sqn Ldr N Mendhe
Armed Forces Medical Services, India**

Abstract

Incidence of cases of High Altitude Pulmonary Oedema (HAPO) has been a cause of concern to military medicine authorities wherever and whenever deployment of troops for mountain warfare was considered. Large numbers of Indian troops are deployed at altitudes above 2700m (9000 ft). Consequently, altitude related illnesses including High Altitude Pulmonary Oedema (HAPO) are often encountered medical problems.

Surveillance of HAPO was first started in 1998 by the Armed Forces Central Epidemiological Surveillance Centre (AFCESC) at the Department of Preventive Medicine, Armed Forces Medical College, Pune. All cases of HAPO are required to be reported on structured format proformae. The data generated is analyzed on a monthly basis to understand the epidemiology of the condition and consider preventive measures if required.

Proper acclimatization of troops prior to induction has reduced the incidence of HAPO in recent times. Availability of swift evacuation and forward treatment facilities have greatly reduced the mortality associated with this disease entity which is physiological in origin due to exposure to low oxygen saturation in high altitudes .

This paper discusses the structure of the surveillance system and the lacunae encountered in complete reporting of cases. The epidemiology of the reported cases is also presented.

A MODEL FOR DEVELOPING INTEROPERABILITY AMONG MILITARY NURSES FOR CIVILIAN AID

Martha Turner, RN PhD, Col USAF (ret.)

Abstract

Everyday military nurses are engaged in delivering patient care. Some of them work in military hospitals at home while others are deployed to care for the military and civilians in disaster relief or peacekeeping operations. Often these are joint operations involving personnel from many different countries. Recent examples include activities in Cambodia, Indonesia, Afghanistan, Banda Ache, East Timor, Sumatra, Tahiti and the Philippines. Working well together or becoming interoperable contributes to safe, efficient, effective care and better patient outcomes. A systematic approach to develop interoperability will be presented using a model developed by military nurses for recent work in India and Viet Nam. The model includes a demographic overview of military nurses listing numbers of nurses, ages, geographic distribution, educational preparation, entry into military service, length of service, rank structure, compensation etc. Additionally, clinical practice, administration and healthcare delivery are explored to identify similarities, differences and current challenges. Methods: Included exchanges; observation; document reviews; articulation of roles, responsibilities and lines of authority; interviews and Q&A sessions. Nurses from inpatient, outpatient, educational and administrative practice should be encouraged to participate. Attention to military specific specialties makes this model unique and particularly useful to military nursing. The model concludes with a plan for analysis and examples of recommendations to be considered by appropriate authorities.

Discussion

If time permits, would include sharing experiences of military nurses, current concerns and anticipated challenges.

TRAINING OF NURSES TO MANAGE REEMERGING DISEASES

Lt Col Mala Singh
Armed Forces Nursing Services, India.

Abstract

Human security reflects the new challenges facing society in the 21st century. The emergence of new illnesses such as Acquired Immune Deficiency Syndrome (AIDS), Ebola, and hepatitis C; the increasing inability of modern medicine to respond to resistant and emerging pathogens; and the growing threat of bio- terrorism and bio-warfare, globalization, modern medical practices, urbanization, climatic change, and changing social and behavioral patterns all serve to increase the chance that individuals will come in contact with diseases, which they may not be able to survive. Healthcare workers lack the education and training needed to recognize and treat emerging and re-emerging

illnesses.

Nurses constitute the largest group of workers in the health field, making up at least 50% of the total health work force in every country and over 80% of the health workforce in some countries. The nurse plays a significant role in infection control, antimicrobial resistance efforts, tackling diseases both infectious and noninfectious, assessing trends, looking for causes, and developing interventions on a primary and secondary level and health education. The curriculum of all the nursing streams provide orientation to the topic about emerging and re-emerging diseases and nurses role in managing them to some extent keeping with the educational goals and learning objectives. Therefore, the nurses are required to undergo continuing education programme or specialized training in order to meet the challenges of re-emerging diseases.

EFFECTS OF EMPOWERMENT PROGRAM ON JOB PERFORMANCE OF STAFF NURSES

Lt Col Saisamorn Chaleoykitti

Abstract

As we know, nurses play a very important role for patients in every healthcare organization. Nurses also are knowledgeable, experienced and passionate caring for patients, and their physical, psychological and social needs. Nurses have to be available to the patients for 24 hours a day, by working in shifts. Their jobs can create stress and tension due to job overload from paper work, variety of nursing activities provided to patients, and adaptation with working schedule of day - evening/night shift. The empowerment program is a strategy to promote motivation and develop better job performance for staff nurses. The program can change worker's behavior allowing them to become creative and confident workers. In most hospital structures, ward heads are the most important primary manager, so they should be able to promote empowerment among nurses in their ward. Because of this, the researchers realize the importance of empowering nurses and would like to study the impact of the empowerment program by ward heads to develop job performance standards for staff nurses. Regarding the research findings, the empowerment program by head nurses can promote better job performance of staff nurses. Job performance of staff nurses can be developed by using an empowerment system.

ROLE OF MILITARY NURSES IN DISASTER PREPAREDNESS

LTC Mary Hardy, RN, PhD, LTC, ANC

Abstract

The devastation caused by manmade and natural disasters date back to the beginning of time, but only recently has disaster preparedness become a necessity for military nurses worldwide. The purpose of this project was to synthesize the disaster preparedness evidence in order to inform and further develop disaster military nursing practice in administration, clinical, education, and research roles. The Iowa Model of Evidence-Based Practice (Titler, 2001) was used to guide the process of finding,

critiquing, and synthesizing the literature on disaster preparedness.

The CINAHL database was searched using the keywords disasters, disaster preparedness, natural disasters, and triage in order to conduct a comprehensive search of the literature. Additional manuscripts were obtained based on citations within each manuscript, as needed. Screening criteria were established to determine which manuscripts to include in the review. All manuscripts in the review were critiqued using a standardized tool and graded using the U.S. Preventive Services Task Force criteria. Findings were synthesized, results reported, and recommendations for administration, clinical practice, education, and research developed. A systematic and consistent method was used to critique each manuscript. Study design, type of disaster (natural or man-made), specific disaster, population studied, phase of disaster, and findings were entered into a spreadsheet using a matrix method for quick reference and comparison purposes (Garrard, 1999). Additionally, each manuscript was graded for strength of evidence and overall study quality using the U.S. Preventive Services Task Force criteria (Harris, et.al, 2001).

The outcome of this project is a synthesis of the disaster preparedness evidence. The evidence and gaps in the evidence will point to process improvement, research, and policy activities that could and/or should be implemented.

The findings of this disaster preparedness synthesis will provide an evidence base for military nurse administrators, clinicians, educators, and researchers that can be used to guide activities that improve military nurses' preparation for and response to disasters.

PRODUCTION, CHARACTERIZATION AND USE OF BIOSCAVENGERS FOR ORGANOPHOSPHORUS COMPOUND TOXICITY

Author Dr. Ashima Saxena

Abstract

Production, Characterization and Use of Bioscavengers for Organophosphorus Compound Toxicity

STEM CELL TRANSPLANTATION : ARMY HOSPITAL EXPERIENCE.

Col Velu Nair, VSM
Armed Forces Medical Services, India

Abstract

The stem cell transplantation (SCT) has become an established mode of therapy in many hematological disorders including malignant and non malignant diseases. 72 consecutive (26 females) patients who underwent stem cell transplantation from Apr 1998 to Jun 2005 have been analysed. The mean age was 28 years (range: 3-47). The indications for SCT were CML: AML: 11, Multiple myeloma: 11, Thal major: 8, NHL: 8, MDS: 2, ALL: 2, CLL: 1, Solid tumour: 4, Acquired Aplastic anemia: 1 and Fanconi's anaemia: 1. 28 of these underwent autologous SCT.

44 allogeneic recipients received stem cells from HLA matched siblings. The conditioning protocols comprised of standard Busulfan-Cyclophosphamide in almost all cases except in multiple myeloma (melphalan), MDS (Fludarabine-ATG), and Fanconi's anemia (Fludarabine- cyclophosphamide_ATG). The GVHD prophylaxis for allogeneic transplants consisted of Cyclosporin and Methotrexate. The stem cells were harvested from bone marrow (BM) in 20 patients, peripheral blood (PB) in 50 patients and cord blood (CB) in 4 cases. Of these 2 patients had CB+BM and 2 patients had BM (Cryopreserved) + PB stem cell infusions. The median cell dose infused was 5.97×10^6 /Kg mono-nuclear cells (range 2-15). The median day of neutrophil engraftment ($ANC > 500$) was 12.5 (range: 6-27). Mild to moderately severe mucositis was encountered in 38 patients. It improved with conservative treatment, by the time the counts recovered. 3 patients had significant veno-occlusive disease (VOD) of liver (4.14). One of these died of renal failure. The overall incidence of grade III and IV acute graft versus host disease (ac GVHD) was 20.4% (9 patients) and chronic GVHD in 11.36% (5 patients) in the patients with allografts. 1 patient of CMJL developed chronic GVHD of skin and liver (Vanishing bile duct syndrome). 2 patients died of polymicrobial lung infections. Other complications were hemorrhagic cystitis-2 (2.7%). The overall mortality was 28% (20 patients). These figures compare favorably with the ones reported from other centers in India and abroad.

PROTECTING HUMAN RESEARCH SUBJECTS: THE USAMRMC PERSPECTIVE

TC Jennifer C. Thompson, MD, MPH and COL Laura R. Brosch, AN, PhD

Abstract

The U. S. Department of Defense (DoD) mandates the protection of human subjects and adherence to the highest ethical standards in DoD-supported research. These protections encompass basic respect for persons, beneficence, and justice in the conduct of human subjects research. In the U.S. Army, human subjects' research falls under the purview of an organization-specific Human Research Protection Program (HRPP). The U.S. Army is responsible for and committed to ensuring that research involving human subjects, is conducted in accordance with federal, DOD and Army regulations as well as international ethical and legal requirements.

As a result of their training and operational requirements (to include humanitarian assistance missions), U.S. military personnel are exposed to a unique variety of health threats, both at home and in overseas environments. The mission of the United States Army Medical Research and Materiel Command (USAMRMC) is to conduct research to identify measures to mitigate these threats. In pursuit of those goals, the USAMRMC currently conducts injury and disease prevention and treatment research in civilian and military populations in both the U.S. and international settings. Over the past 50 years these research efforts have produced vaccines, drugs and treatments benefiting both military and civilian populations worldwide. The ubiquitous nature of military operations requires the USAMRMC HRPP to be a worldwide enterprise that provides ethical and regulatory oversight for research conducted at culturally and economically diverse locations across the globe. This requires cultural sensitivity, respect for the local national Ethical Review Committee oversight of research, particular attention to the informed consent process with sensitivity to the risk of coercion or excessive inducement, and awareness of the potential for therapeutic misconception. The USAMRMC HRPP implements the DOD-mandated additional research protections for military personnel participating in research. Unit officers and noncommissioned officers (NCOs) may not influence the decisions of their subordinates to participate or not to participate as research subjects. Military personnel in the chain of command may not be present at the time of research subject solicitation and consent. They may not attend research recruitment sessions in which members of units under their command are afforded the opportunity to participate as research subjects. Finally, in many cases, an ombudsman, unaffiliated with the proposed research or the unit, must be present to monitor that the voluntary nature of participation is adequately stressed and that the information provided about the research is adequate and accurate. In summary, the USAMRMCs HRPP is the framework that provides oversight of a diverse array of research efforts at home and throughout the world. Through careful attention to regulatory requirements and sensitivity to ethical, moral and cultural standards, the USAMRMC HRPP is able to achieve a delicate balance among the interests of the research subject, science and society. Although associated with multiple challenges, the potential benefits of these endeavors include advances in public health, improved local healthcare infrastructure, and the training of scientific and medical personnel.

THE EFFECT OF OVERLOAD TRAINING ON ENDOTOXEMIA, PROINFLAMMATORY CYTOKINES AND ANTILIPOLYSACCHARIDE RESPONSESDURING EXERCISE UNDER HEAT STRESS

Dr Chin Leong Lim

Abstract

RAPID ACCLIMATIZATION TO HIGH ALTITUDE – POSSIBLE USE OF GLUCOCORTICOID PROPHYLAXIS

Dr. Ramesh Chand Sawhney, DIPAS

Adaptation to hypoxic stress is an interplay of various physiological and metabolic processes of the body in which activation of the hypothalamic pituitary adrenal (HPA) system plays a central role for stimulation of cardiorespiratory and hemopoietic system to facilitate availability of O_2 . The hypoxia induced activation of the adrenocortical system is essential to enhance survival through increase in cardiac contractility, cardiac output, sensitivity to the pressure effects of catecholamines, work capacity of the muscles and capacity to mobilize energy. Though, the hypoxic stress activates the adrenomedullary and adrenocortical system, the stimulation of adrenal cortex is not always uniform. About 40% of the subjects who were inducted to high altitude (HA) by air in fact did not show any increase in cortisol levels and rather showed a slight decline. This group showed marked signs and symptoms of acute mountain sickness (AMS) as compared to the subjects which showed an increase in plasma cortisol.

Prophylactic administration of 20mg of prednisolone once a day for two days prior to induction to high altitude and for three days on arrival at high altitude was able to curtail severity of AMS when evaluated in a double blind placebo controlled study. The dose of steroid used did not inhibit endogenous secretion of ACTH, cortisol, epinephrine and norepinephrine as HA response to adrenocortical and adrenomedullary hormones was identical in placebo and prednisolone treated subjects. In addition, the integrity of the HPA axis after insulin induced hypoglycemia was also well maintained. Therefore, in case of emergency army missions, when it is not possible to provide adequate time for physiological acclimatization, prophylactic use of glucocorticoids can be used for rapid induction to HA.

Key words

High altitude, acute mountain sickness

THE INDIAN PARADOX- SYNDROME X

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Abstract

Syndrome 'X', a unique clustering of impaired glucose tolerance (IGT), raised blood pressure, raised serum triglycerides and low HDL-cholesterol, occurring under the influence of insulin resistance and its resultant hyperinsulinaemia, has been hypothesized to be a major risk factor for ischemic heart disease (IHD). This study was undertaken on apparently healthy middle-aged Indian Army personnel as a cross-sectional analytic epidemiological design, undertaken on 614 healthy Indian Army personnel, aged 35 years and above, selected by random sampling.

Results indicated that there is, indeed, a statistically significant clustering between fasting hyperinsulinaemia, raised blood pressure, IGT, raised triglycerides and low HDL. With the standard defining criteria, the prevalence of syndrome 'X' was observed to be 8.47% (95% CI 6.27% to 10.47%). Initial univariate and subsequent multivariate analysis using multiple logistic regression method, indicated that the significant and independent predictors of syndrome 'X' in the study population were increasing age, generalized overweight, central obesity, lack of adequate physical exercise and low physical fitness. Presence of syndrome 'X' markedly and significantly increased the risk of resting ECG changes suggestive of coronary insufficiency.

The study has clearly demonstrated that syndrome 'X' is an important health issue among apparently healthy, middle aged Army personnel. Based on the findings, certain recommendations for prevention of this syndrome in the study population have been submitted.

FACTORS RELATING TO SMOKING BEHAVIOUR AMONG PRIVATES

Medical Cadet Sataporn Soonyo

Abstract

Smoking is a very important problem in the world. There are 4 million deaths per year. Privates had the most percentage of smoking in Thai army. To plan in choosing the smoking behavior in privates, the study was desired to find out the factor that correlate to their smoking behavior. This descriptive research was to identify the factors smoking behavior among privates in medical private Phramongkutklao Hospital. Self administered questionnaires were used for data from 117 privates. That predisposing factors (attitude of smoking behaviors), enabling factors (where to buy cigarette) and reinforcing factors (peer groups, instructor and mass media campaign) were significantly related to smoking behavior among privates. Regarding the research findings, attitude of smoking, where to buy cigarette whether peer groups and bosses are involved continuously in supporting various smoking preventions.

RISK FACTOR PROFILE OF CAD IN <40 YRS OLD SERPER IN SER REF HOSPITAL

Lt Col Anil Dhall, SM, Lt Col J Kotwal, Lt Col SK Malani, Dr S Mohan, Lt Col S Garg, Lt Col Vincy Jetley, Col Nikhil Kumar, Maj Gen OP Mathew, SM, Lt Gen ML Chawla, AVSM, VSM
Armed Forces Medical Services, India

Abstract

The ethnic Indian male is at very high risk of developing coronary artery disease (CAD). Service conditions especially related to exposure to high altitude, dietary indiscretion and stressful combat deployment place the young serving soldier at increased risk of developing CAD.

90 consecutive young soldiers below the age of 40 years admitted a tertiary care referral hospital were studied retrospectively with respect to clinical profile, anatomical profile and conventional and emerging risk factors.

Age arranged between 21-40 years and all patients were males. 60 patients presented with Acute Myocardial Infarction (AMI), 16 with Acute Coronary Syndrome (ACS) and 14 with Chronic Stable Angina (CSA). The conventional risk factors were Diabetes Mellitus in 5 (5.5%), Hypertension in 10 (11%), Smoking in 40 (44%), Dyslipidemia in 18 (20%), Obesity in 12 (13.3%) and family history of CAD in 3 (3.3%) cases. Other risk factors were combat stress in 36 (40%), exposure to high altitude area (HAA) in 12 (13.3%) and hyperhomocystinaemia in 30 cases. Echocardiographic assessment of Left Ventricular (LV) function revealed an ejection fraction of <0% in 6 (6.6%), 30-40% in (20%), 40-50% in 27 (30%) and > 50% in 39 (40.3%) patients. The coronary angiographic profile was Normal Epicardial coronaries in 9 (10%), single Vessel Disease in 50 (55.5%), Double Vessel Disease in 18 (20%) and Triple Vessel Disease in 13 (14.4%) cases. None of the patients had Left Main coronary artery involvement. Two patients had spontaneous coronary artery dissection at High altitude area, one of Left anterior descending artery leading to anterior MI and other patient had inferior wall MI secondary to spontaneous dissection of Right coronary artery.

CAD is showing an increasing trend in young soldiers, partly due to unique service conditions. A limited cohort of young soldiers with CAD has been analyzed for risk factor profiling. Exigencies of service such as stressful combat exposure and deployment at HAA have emerged as strong associations for CAD in young soldiers in addition to the conventional risk

PREVENTION OF TYPE 2 DIABETES

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Abstract

Type 2 diabetes is an important health problem and it imposes significant burden on affected people. Hence it becomes imperative for the health professionals to find out ways to prevent it. The natural history of the type 2 diabetes is well understood. The incidence is strongly related to hyperglycaemic states- Impaired Fasting Glucose (IFG) and Impaired Glucose Tolerance (IGT) The risk factors are- age family history of type 2 diabetes mellitus, body mass index, waist hip ratio, blood pressure and lipid levels.

Type 2 diabetes is a major health problem world over. Individuals at high risk of developing diabetes can be easily identified by screening with Fasting Plasma Glucose or 2 hours OGIT. Interventions strategy should be aimed for individuals with IFG/IGT.

Life style modifications should be the first line measure. Increased physical activity and weight loss are effective and should take precedence over drug therapy, and they are not associated with any side effects. Drug therapy should not be routinely used to prevent diabetes.

EPIDEMIOLOGY OF HANTAVIRUS CASES AMONG U.S PERSONNEL TRAINING IN THE DMZ, REPUBLIC OF KOREA

Terry A. Klein, Luck-Ju Baek, Heung-Chul Kim, Monica O'Guinn, John S. Lee, Sung-Tae Chong, Michael Turell, Jin-Won Song

Abstract

Hemorrhagic fever with renal syndrome (HFRS) is a rodent-borne disease commonly referred to as Korean Hemorrhagic Fever (KHF) throughout northeastern Asia. The primary reservoir for KHF is the striped field mouse, *Apodemus agrarius*. During October - November 2005, there were four cases of KHF reported among US military personnel. Epidemiology of the four cases revealed that the first patient, while potentially exposed to KHF at other Local Training Areas (LTA), most likely contracted KHF at Firing Point (FP) 60. Previous rodent surveillance showed that there were distinct differences in the nucleotide sequence of the hantavirus at different training sites. The nucleotide sequence of patient one matched that of one of the rodent hantavirus groups at FP 60. The other three patients had a common exposure at Twin Bridges Training Area (TBDA) and nucleotide sequencing is being conducted for rodents collected from the same exposure sites. Habitat characteristics demonstrated tall grassy margins along the perimeter of the FP in addition to small (10 - 20 m in diameter) grassy islands within the center of the training site and within 20 meters of each other, allowing for migration of rodents from one grassy area to another over the bare training site. Firing of artillery, as well as vehicular traffic, creates dust that is potentially contaminated with hantaviruses. Similarly, at TBDA fighting positions are positioned along a dirt road that is bordered by tall grasses, the primary habitat of the striped field mouse. The striped field mouse can often be seen crossing the dirt road from one grassy site to another, potentially spreading feces/urine on the roadway. While vehicles are in their fighting positions (less than 5 m from the dirt road), traffic from other wheeled and tracked vehicles create potentially hantavirus contaminated dust. Recommendations to reduce the potential for hantavirus infections are presented.

PROFILE OF HEP B AND C INFECTION IN SOLDIERS

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Abstract

Hepatitis B and C viruses are parenterally transmitted infections that pose a threat of silent progression to chronic hepatitis, cirrhoses and hepatocellular cancer. This study analyses the profile of Hepatitis B and C infection among Indian soldiers.

Consecutive patients registered at 'Chronic Hepatitis B and C Registry' at a tertiary care centre from 2003 to 2005 were analyzed and followed up. Their biochemical, serological and histo-pathological data were analyzed.

A total of 899 patients were registered during the study period, of which 620 (69%) had Hepatitis B, 235 (26%) had Hepatitis C and 44 (5%) had co-infection with Hepatitis B and C. Of these 481 (54%)

had associated co-morbidities such as malignancies, other hematological disorders such as thalassemia, chronic kidney disease or renal transplantation, or HIV co-infection. These patients were detected during antenatal Screening (3.2%), screening for Infertility (10.2%), screening for Blood donation (35.6%), acute Hepatitis (32.9%), evaluation of mildly deranged LFT (2.8%)/other diseases (12.1%) or during family screening (3.2%). Among hepatitis B infections with no co-morbidity, 196 (87.9%) were carriers with normal LFTs. Of these 12.6% were positive for HBV DNA. One year after initial diagnosis, (87.6%) patients continued to have normal LFTs.

Hepatitis B (69%) is commoner than Hepatitis C (26%) among Indian soldiers registered for these diseases, and over half such patients have significant associated co-morbidities. In the absence of co-morbidity, Hepatitis B carrier state is the commonest (87.9%) presentation.

CASE REPORT: CONTACT VACCINIA VIA TRANSMISSION DURING A FOOTBALL GAME

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Abstract

In response to the global threat of bio-terrorism, the United States military reactivated its smallpox vaccination program. Out of almost 800,000 vaccine recipients, contact transfer of vaccinia was confirmed in thirty cases. We present a soldier who developed contact vaccinia via transmission during a football game. A 26 year-old Army active duty male presented to health care complaining of a one-week history of tender right arm and facial vesicles. Two weeks prior to presentation, the patient's military unit underwent smallpox vaccination in preparation for deployment to Iraq. However, the patient was ineligible to receive the vaccination secondary to a prior diagnosis of eczema. Four days after the unit vaccination, the patient participated in a unit-wide football game, resulting in contact with a vaccinated soldier's inoculation site. Six to ten days after contact exposure, the patient developed a single papule on his dorsal right forearm. A few days later a similar lesion developed on the right side of his face. The patient, believing the facial papule was acne, ruptured it resulting in a secondary superficial skin infection. He was diagnosed with impetigo by his primary care physician and prescribed cephalexin 500mg QID for ten days and mupirocin 2% ointment which had minimal effect on his facial lesions. Due to the lack of significant improvement, the patient was referred to Otolaryngology service. After obtaining a history and physical, the patient was immediately referred to the Dermatology service for further evaluation of probable contact vaccinia. Physical examination at that time demonstrated solitary, round, erythematous plaque five cm in diameter with overlying scale crust and tenderness to palpation on his right forearm. The right side of his face had multiple lesions that were very similar to those on his forearm, ranging in size from 1.5- 3.0 cm in diameter. Virology studies were negative for herpes simplex virus and varicella zoster virus. Polymerase chain reaction testing confirmed the presence of non-variola orthopoxvirus. Infectious Disease service was consulted. Treatment with vaccinia immune globulin or cidofovir was not implemented since the patient did not meet any of the CDC criteria for treatment of vaccinia complication. The patient was treated with supportive care and had complete resolution without the development of eczema vaccinatum.

Contact transfer vaccinia is a rare complication of smallpox vaccination, but it can lead to the same adverse effects as observed with administration of the vaccine to include eczema vaccinatum and auto-inoculation. In militaries that routinely use the smallpox immunization, continued efforts are needed to educate vaccinees regarding the importance of proper vaccination site care in preventing contact transmission.

DIAGNOSTIC EFFICACY OF POLYMERASE CHAIN REACTION (PCR) IN BRONCHOALVEOLAR LAVAGE (BAL) FROM PATIENTS WITH SMEAR NEGATIVE PULMONARY TUBERCULOSIS.

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Abstract

Diagnosis of Pulmonary tuberculosis in Paucibacillary cases of smear negative tuberculosis is always a challenge to the laboratory. All methods are adopted to see or grow the bacilli. This study was under taken to evaluate the diagnostic efficacy of Polymerase Chain Reaction (PCR) in detecting Mycobacterium tuberculosis from bronchoalveolar lavage specimens obtained by bronchoscopy in cases suspected to be suffering from Pulmonary tuberculosis but are negative for AFB in their sputum smears or the sputum could not be collected.

56 patients undergoing investigations for suspected Pulmonary tuberculosis at a tertiary care Military Hospital were evaluated over a period of 6 months. Those patients who were sputum smear negative for AFB, underwent fibre optic bronchoscopy and collection of BAL fluid. One portion of each lavage specimen was submitted for smear examination for acid fast bacilli and mycobacterial culture on LJ medium, while the other portion was sent for PCR assay to look for a 282 bp DNA segment belonging to M tuberculosis complex specific MPB 64 gene. A control group of 10 patients suffering from other lung conditions were also evaluated.

32 of the 56 patients in the study group were positive for M tuberculosis in the lavage fluid. 24 pts had negative lavage PCR results. Two of the 32 lavage PCR positive cases were found to be positive for AFB by ZN stain. Only 11 of the 32 lavage PCR positive patients grew M tuberculosis by culture on LJ medium. 01 cases grew the bacilli on LJ medium but did not show positivity on PCR. 03 control cases who were asymptomatic but had sequelae of Fibrosis were PCR positive in the lavage fluid. In all control cases AFB smear and culture were negative. Considering culture on LJ medium as the Gold standard, lavage PCR sensitivity & specificity were 84.6% and 92.3% respectively.

In clinically and radiologically suspected cases of Pulmonary tuberculosis who are sputum negative for AFB or in whom sputum cannot be collected, PCR can be used as a supportive diagnostic test for providing rapid results.

EBOLA AND MARBURG VIRUS-LIKE PARTICLE VACCINES

Dr. Sina Bavari, Kelly Warfield, Dana Swenson, M Javad Aman

Abstract

The filoviruses, Ebola and Marburg virus, cause sporadic outbreaks in humans with mortality rates ranging from 30-90%. No efficacious human vaccine or therapeutic is currently available to prevent or treat the severe hemorrhagic fever caused by either Ebola or Marburg virus infection. The matrix filovirus protein (VP) 40 is sufficient for spontaneous formation of virus-like particles (VLPs) resembling the distinctively filamentous, infectious virions. Co-expression of additional filovirus proteins, including VP24, VP30, VP35, and glycoprotein (GP), increases efficiency of VLP production and results in particles containing multiple filovirus antigens. Vaccination with Ebola or Marburg VLPs containing GP and VP40 completely protects rodents from lethal challenge with the homologous virus. These candidate vaccines are currently being tested for immunogenicity and efficacy in nonhuman primates. Further, detailed immunological studies are underway to dissect the requirements for VLP-mediated immunity and early studies indicate the importance of both cellular and humoral immune responses against GP for efficient protection against filovirus challenge. In addition to their use as a vaccine, VLPs are currently being used as tools to learn lessons about filovirus pathogenesis, immunology, replication, and assembly requirements.

DENGUE VACCINES - ARE WE AIMING AT A MOVING TARGET?

John Aaskov, Major

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Abstract

Dengue is a potentially fatal disease caused by mosquito-borne viruses of the same name. It has been the cause of significant numbers of non-battle casualties in conflicts around the world since the Second World War. After more than sixty years of failure, a number of dengue vaccines are being developed or are in clinical trials. However, even if the vaccines elicit an immune response, it is not clear whether they will be effective against all strains of dengue virus. Dengue virus populations are extremely diverse and the genotype of viruses at a locality can change rapidly and dramatically. Strains of the virus also are able to be carried over large distances and to become established at new localities. A better understanding of dengue virus population dynamics and the forces that drive their evolution is needed if effective strategies are to be developed for the deployment of these long awaited vaccines.

A PHASE 1/2 TRIAL OF A TETRAVALENT LIVE-ATTENUATED DENGUE VACCINE IN FLAVIVIRUS NAIVE THAI INFANT

Lt Col Mammen Mammen

Abstract

Background: The Walter Reed Army Institute of Research (WRAIR) has produced a tetravalent live-

attenuated dengue vaccine that has been well tolerated and immunogenic in U.S. adults and Thai children. As infants are considered by many as an important age group for vaccination in dengue-endemic countries, we evaluated the vaccine in Thai flavivirus-naïve infants who are at risk for dengue.

Methods: Fifty-one healthy flavivirus-naïve infants aged 12-15 months were enrolled and randomly assigned to one of two groups at the Phramongkutklao Hospital of the Royal Thai Army. Group I (N=34) received dengue vaccine at study months 0 and 6; Group II (N=17) received control vaccines (varicella at study month 0; Hemophilus influenza B at study month 6). All received a licensed inactivated Japanese encephalitis (JE) vaccine at study months 7 and 7.5. Solicited and unsolicited adverse events were collected for 21 and 31 days, respectively, after each vaccination; serious adverse events (SAEs) were collected throughout the study. Safety testing included complete blood count and liver enzymes measured at intervals after each vaccination. Antibody endpoints were determined by 50% plaque reduction neutralization test using each serotype of dengue virus.

Results: Fifty infants completed all study visits; one infant was withdrawn due to re-location remote from Bangkok. All infants tolerated the vaccinations without SAEs attributed to vaccination as reported by an independent data monitoring committee. Two infants experienced one day of grade 3 fever, one with a maximum temperature of 39.2°C occurring 19 days post-dose 1 of dengue/control vaccination and the other with 40.20C occurring 5 days post-dose 1 vaccination. At the time of this abstract submission, the investigators await unblinding and the release of immunogenicity data.

Conclusion: The WRAIR tetravalent live-attenuated dengue vaccine was well tolerated in this preliminary infant trial.

BENIGN HYPERSENSITIVITY REACTIONS TO SMALLPOX VACCINE

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United States – Hawaii

Abstract

Background: With the reinstitution of smallpox vaccinations, physicians are for the first time since the 1980s seeing significant numbers of adverse events. The most common adverse events seen in our large military population are benign. We observed a clinically and histopathologically distinct reaction pattern that has not been fully characterized before. All smallpox-vaccinated patients at Fort Hood, Texas with adverse cutaneous reactions were referred to the dermatology clinic at Darnall Army Community Hospital. A staff dermatologist who performed a skin biopsy and took clinical photos evaluated patients. If the patients had intact vesicles or pustules, direct fluorescent antibody testing, viral and bacterial cultures, and polymerase chain reaction (PCR) assays were also done. Three hypersensitivity reaction patterns were seen: exanthematous, erythema multiforme-like (EM-like), and urticarial. The patterns had distinct clinical and histopathological findings. Of the 11,058 vaccinees, six had the exanthematous reaction pattern, two had the urticarial reaction pattern, and one had the EM-like pattern. We describe a new, exanthematous type of hypersensitivity reaction to the smallpox vaccine. Hypersensitivity reactions occur at a rate higher than previously reported. In a carefully screened military population, these three hypersensitivity reactions are much more common than the life-threatening or serious reactions. Though the reactions have distinct clinical and pathologic features, they all are characterized by mild or absent systemic symptoms and a benign outcome.

Session 14D : Professionalism & Technology

THE ENLISTED AND NCO CORPS

CSM Joel Jenkins

Abstract

It is widely recognized and accepted that the United States Army has the finest Noncommissioned Officer Corps in the world. The success of this group has not been without cost, commitment and failures. The intent of this session will be to discuss the various training methodologies, teaching venues, and strategies associated with creating, managing, and developing enlisted healthcare professionals and military leaders. Addressing the needs identified by the various senior enlisted and warrant officer representatives in each country's respective Medical Directorate, a comparison will be made in reference to the recruitment, retention, initial training Program of Instruction, sustainment training, skills validation and leader development. These topics are intended to serve as the base from which other discussion will originate. The participants will gain knowledge and understanding into the processes required to develop and foster an environment that prepares junior soldiers and non-commissioned officers for the rigors of leadership, both in a peacetime and wartime environment.

Roundtable discussion during the senior enlisted break out sessions will include topics that focus on the development of the service member as leader with an emphasis on the Noncommissioned Officer Education System. The roundtable format will also facilitate an exchange of multicultural ideas for Subject Matter Expert Exchange programs aimed at assisting the enlisted leadership of developing countries in their endeavors construct an effective noncommissioned officer co.

DEVELOPMENT TRENDS OF MILITARY HEALTH SURVEILLANCE IN MILITARY MEDICINE

Dr Wang Sing Jun

Abstract

THE US ENVIRONMENTAL HEALTH PROGRAMME

Colonel John T Cinco

U.S. Air Force

Abstract

The United States Air Force International Health Specialist (IHS) program provides medical personnel with linguistic and cultural skills in various career fields the opportunity to coordinate and collaborate with partner nations on health activities to enhance interoperability and theater security. USAF IHS teams are assigned to the various geographic theaters, providing unique initiatives to enhance interoperability of that region. Activities conducted are broad spectrum and include humanitarian assistance, disaster management, armed forces medical training, and aerospace medicine subject matter expertise. Other activities include building a nations capacity to respond to disasters and other contingencies such as pandemic influenza, as well as health issues that threaten troop strength such as malaria and HIV/AIDS. Typical training exchanges include the Combat Life Saver

course and the Tactical Combat Casualty Care course. Subject matter expertise exchange includes public health, aerospace physiology, and aeromedical evacuation. The IHS teams played a critical role in the Tsunami response as well as the Pakistan-India earthquake response activities.

HOSPITAL INFORMATION SYSTEM

Col Rajvir Singh

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Abstract

The response of the hospital to the challenges of information resource management determines the quality of care and the success of the institution. One major opportunity for improving quality relates to computerized hospital information systems (HIS) to overcome inefficiencies of paper medical records. The author's personal experience in the design and implementation of a computerized HIS in a premier 865 bedded tertiary care hospital of the Armed Forces. A number of barriers, both human and technological, clearly became apparent that had to be overcome to achieve a successful implementation. Active use of an HIS implies a high degree of human interaction with the system. The systems have to be nearly always available, they have to respond rapidly, required information; must be easy to specify, and the information presented has to be up-to-date and reliable. These requirements arise early in the system's growth. The ongoing maintenance costs for the system are major financial outgo. Top management must be convinced of the positive cost benefit ratio of computerized HIS and these recurring costs factored from the beginning. Health care organizations currently invest less in IT than any other information-intensive industry. The rate at which IT driven changes are realized in the medical field will be determined in part by availability of funding and incentives from government and the ability of the healthcare system to accrue the potential benefits. Development of a National Health information Infrastructure by the Central Government is also needed.

Abstracts : Posters

DEVELOPMENT OF NOVEL VASODILATOR OINTMENTS USING PHARMASCINTIGRAPHY FOLLOWED BY PRELIMINARY FIELD USE FOR TREATING MILD COLD INJURIES

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Mild cold injuries, caused by local vasoconstriction, result in avoidable pain, discomfort and loss of efficiency in a huge number of subjects exposed to sub-zero temperature. The problem is aggravated in soldiers who have to face significant to extremely low effective environmental temperature due to operational reasons. The purpose of this work was to develop new vasodilator ointments for local effect only, and to objectively prove their efficacy (zero-phase clinical trial) before attempting field trials.

Nuclear medicine scintigraphy was standardized to obtain qualitative & quantitative information about microcirculation of the hands and feet. 15 ointment formulations were prepared in-house using appropriate quantities of routine therapeutic agents known to possess vasodilator action on the microcirculation. Controlled pharmscintigraphy was done in 90 volunteers (6 for each formulation) to quantify the improvement in microcirculation following single application drug ointment. Five best ointments were chosen for further studies. Two of these then entered a small field efficacy trial (n=50 subjects) in an appropriate cohort with cold injuries.

30-150% increase in local microcirculation was achieved with a single application of these two ointment forms in all 6 subjects undergoing pharmacoscintigraphy, along with a subjective feeling of warmth at the site of local application. Increase in microcirculation of underlying musculature was also proved, confirming deep penetration of the therapeutic agent. Ongoing field trial has given encouraging result suggesting utility of the novel ointments in mild cold injuries (Grade 1-2) in field conditions.

MEDICAL COVER FOR OPERATIONS IN N B C ENVIRONMENT

Brig Zile Singh
Armed Forces Medical Services, India

Abstract

N B C scenario may never offer a protected hospital environment. There may be lack of appropriate communication. Therefore, it is imperative that the care of battle casualties in such an environment must have multiple alternatives and options ranging from immediate air or surface evacuation to forward positioning of skill. Medical cover should be designed to carry out specialized care for salvaging lives and limbs. To attain this objective, combat medical care should incorporate standardized principles of pre-hospital treatment, rapid assessment, resuscitation, stabilization and initial life and limb saving surgery to render the battle casualty transportable to the appropriate medical echelon. The principles of triage and 'golden hour' concept of wound management should be followed to provide highest standard of care to maximum number of casualties. Patients should be decontaminated by removing clothing and washing exposed body surfaces. Medical units should be equipped with commensurate mobility to operate in direct support of combat elements. They should have flexibility and adequate reserve. Medical cover plan must relate to the immediate operation and also to the

proposed operations in subsequent phases. Medical units in NBC scenario must be provided adequate communication facilities and dedicated air evacuation. The holding facilities at RAP should be upgraded. The medical personnel should be trained in combat survival skill. Provision of NBC protective Ambulance and shelters should be made for speedy collection, treatment and evacuation of casualties in the NBC warfare devastated zone.

HIGH ALTITUDE RELATED ILLNESS

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Abstract

High altitude is elevation above 2700 m or 9000 ft. Environmental conditions affecting physiology at high altitude include low atmospheric pressure and low PO₂, low temperature and humidity, high intensity of sunshine and cosmic rays, and isolation. HA illnesses are an important problem in the Indian Armed Forces. Predisposing factors include rapid ascent, compromised respiratory function and exertion. Precautions for prevention of High Altitude Pulmonary Oedema (HAPO) include following proper acclimatization schedule, better manpower management, Induction screening medical examination, education of troops, provision of special clothing, better casualty evacuation facilities, and optimal use of medical resources.

BLOOD COMPONENT THERAPY - ROLE IN POLYTRAUMA

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Abstract

Trauma is a leading cause of death in persons under 40 years of age. It causes significant blood loss leading to hypovolaemic shock. Rapid administration of intravenous fluids or blood is required in most cases besides definite surgical treatment. Mortality and morbidity can be prevented if medical care can be provided within the golden first hour of occurrence. The first thirty minutes of occurrence is known as 'Platinum Half Hour'.

Modern blood banking envisages optimal use of every blood donation by way of blood component therapy as more patients can be treated with same unit of blood. The various blood components which may be of use in a trauma patient are Packed red blood cells, Fresh Frozen Plasma, cryoprecipitate and Platelet Concentrate. Some patients however may need massive transfusion. What to transfuse, when to transfuse and how much to transfuse are decisions which need to be taken by critical care specialist.

Resuscitation of trauma patient currently involves three distinct phases of replacement therapy; volume, Red cells and clotting factors and platelets. The objective is to re-establish oxidative cell metabolism within the golden first hour as prolonged shock and resuscitation delay can lead to multisystem organ failure.

The strategy of blood component therapy is to match appropriate products with specific indications. Whole blood should only be used where facilities for blood component therapy are not available.

MUSHROOM POISONING

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Abstract

Mushrooms have been fascinating the mankind since generations as a delicacy, as a medication, as an addictive substance and as a potent poisonous substance. Mushroom poisoning is caused by the consumption of raw or cooked fruiting bodies of a number of species of higher fungi. For individuals who are not experts in mushroom identification, there are generally no easily recognizable differences between poisonous and nonpoisonous species. There is no general rule of thumb for distinguishing edible mushrooms and poisonous ones. Accidental poisoning by wild mushrooms has been reported from different parts of the world but very few reports are from India.

We report 22 cases of accidental mushroom poisoning with 12 fatalities in a referral hospital of Sikkim. Wild mushrooms are traditionally picked and consumed in the remote areas of the state during the months of August and September. Accidental poisoning occurs now and then during these months. In the reported episode children picked some mushrooms and they were cooked and eaten by the people of four families in a remote village of Sikkim.

The duration of appearance of symptoms ranged from 17 hours to 37 hours. The commonest presentation (18/22) was rapidly deepening jaundice with associated constitutional symptoms. Other symptoms include severe abdominal pain, vomiting and diarrhoea. Serum bilirubin levels ranging from 3.0 to 12.8 mg/dl were observed. The serum alanine aminotransferase and aspartate aminotransferase levels ranged from 68 to 1200 IU/ltr. Six patients developed acute renal failure. The fatalities clinically were due to hepatic encephalopathy in all cases and associated acute renal failure was also present in four cases. The duration of presentation, severity of the symptoms and rapid progression of the disease was related to the amount consumed. As the recommended treatment is hepatic transplantation and the facility being not available, the cases were managed symptomatically. The species was identified as *Amanita phalloides* (Death Cap or Destroying Angel).

Autopsies were carried out in two of the 12 fatalities. In both the cases massive hepatic necrosis, acute tubular necrosis and marked cerebral oedema were noticed.

OPTIC NERVE INJURIES

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Abstract

Optic nerve trauma is relatively uncommon and can be associated with severe head injury and multi system trauma. No single algorithm exists in the management of this complex issue of traumatic optic neuropathy and the role of intravenous methylprednisolone is not clear.

276 eyes of patients with head injury seen over five years with or without ocular injury during military operations were evaluated for ON injury. 33 eyes had ON injury, diagnosed on the basis of unexplained visual loss, presence of relatively afferent papillary defect and the use of diagnostic modalities like visually evoked potential (VEP) and NRI / CT Scan. Nine eyes had gun shot wound (GSW), 13 were due to splinter injury, and 11 cases had associated head injury. VEP was suggestive of ON injury in all cases. MRI / CT Scan showed positive findings in the form of laceration, transection, edema or haematoma of the ON. The cases were managed with IV infusion of methylprednisolone followed by oral steroids.

Two out of nine cases of GSW with no perception of light improved to finger counting vision. One out of 12 eyes with splinter injury improved to 6/9 while the others showed no improvement. Four out of 11 eyes associated with head injury showed improvement from < 6/60 to 6/36 or better vision.

MISSILE INJURIES OF FACE AND NECK IN A HIGH INTENSITY CONFLICT

Col A K Kakkar

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Missile injuries of the face & neck pose a challenging problem to the treating surgeon especially when the missile fragments are lodged in the vicinity of vital structures. Most of these missile wounds are highly contaminated and can pose a difficult therapeutic dilemma to the surgeon in case of associated tissue loss as they may require major reconstruction. Securing an adequate airway and control of haemorrhage are of paramount importance.

Missile wounds differ from other forms of penetrating injury because the missile not only disrupts the tissue, but the kinetic energy inherent in a fast moving missile is dissipated into the surrounding tissues. The resultant tissue destruction is much more and is proportional to the amount of energy transmitted to the tissue by the missile. For convenience these injuries are usually classified as (a) penetrating (b) perforating and (c) avulsive.

In the majority of cases foreign bodies (splinters) are retained in deep subcutaneous tissue or facial muscles and even paranasal sinuses. There may be associated fracture of facial bones (maxilla/mandible) and injury to cranial nerves. Penetrating neck injuries may result in sub-cutaneous emphysema (including disruption of larynx or trachea) and vascular injuries.

Copious vigorous irrigation of wounds and debridement of devitalized tissues are of paramount importance. This early surgical debridement prevents colonization of the necrotic zone by micro-organisms and consequent extension of the non-viable tissue. The entire tract of these missile injuries is to be identified and adequately debrided, except if passing near vital structures and large vessels. In skin, tendon, fascia and viable bone, debridement should be less radical. Since the face and neck has an excellent blood supply most of wounds can be closed by primary suturing as far as possible.

All wound repair should be accomplished by the "inside out, bottom up" approach. By first closing the soft tissue injuries of the lining mucosa and then working outwards, the wounds are protected from further contamination by intraoral secretion and dead space is eliminated. Overzealous searching for splinters (missile fragments) should not be done unless they are noted within the confines of the wound. A good general principle to remember is that a bullet ceases to cause damage when it ceases to move.

Tragic as the human cost of war is, more tragic would be the outcome if the wounded are not tended expertly, quickly and efficiently. The guiding dictum must be that individuals already ravaged by war are tended by hands that care and a mind that knows what it is doing.

IATROGENIC RADIATION PROCTITIS: NEEDS DIFFERENTIATION FROM INFLAMMATORY BOWEL DISEASE

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Iatrogenic radiation pathology of the GIT has been recently recognized as an entity with the increased use of radiation therapy (RT) for malignant disorders. Radiation Proctitis develops as a result of treatment for cervical bladder and endometrial cancer. The changes of radiation in the rectum in early phase ie within 4 months of RT are well recognized. However, the changes occurring after 6 months have not been clearly documented. These changes are the ones which may be confused with inflammatory bowel disease/Crohn's disease. Also the risk of cancer in these cases may be higher as the Committee on Biological Effects of Radiation Exposure has placed the risk of Post RT colon cancer to be between 0.1 to 0.7 additional cases per year for each million persons exposed to one rad. The present study was thus carried out to look at the effect of radiation in the abdomen-pelvic region on the recto-sigmoid and colonic biopsies with special emphasis to late effects (> 6 months after RT) to look for features to differentiate from IBD.

All patients admitted over a period of 2 ½ years for Radiotherapy for abdomeno-pelvic malignancy were included in study. Biopsy was performed by Olympus CFPZOL endoscopes in nil oral condition and 10 normal recto sigmoid and colonic biopsies served as control. The sections were stained with H&E and special stains for mucin and fibrosis.

Clinical data and endo scopic biopsy of 67 patients were collected, of which 5 were excluded due to inadequate tissue sample viz. 23 cases had mucosal biopsy at < 4 months after RT (Cluster A), 10 cases between 4-6 months (Cluster B) and 29 cases > 6 months after RT (Cluster C Late phase). 21% of the patients were symptomatic with commonest symptom of rectal bleed. Rectal stenosis was seen in 3 patients (1.6%) which is a risk factor for development of carcinoma. The microscopic features differed in early (Cluster A) with moderate (Cluster B) and late phase. The features and severity was correlated to the dose of the RT in chronic injury. Patients with decreased dose had diminished mucosal injury.

Radiation proctitis is a common iatrogenic problem and both the clinician and pathologist need to be aware of the symptoms and mucosal alterations after variable period of time as described in the present study. This will help in prevention of erroneous diagnosis of inflammatory bowel disease and proper follow up of the cases.

TRAUMATIC STRESS RESPONSE IN SEVERE OCULAR TRAUMA AMONGST CASUALTIES OF MODERN UNCONVENTIONAL WARS

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Though military conflict has repeatedly kindled interest in the so called traumatic neurosis, no scientific approach was apparent until World War I, when terms like 'shell shock' and 'soldier's heart' first appeared. Today, when the Armed Forces are being increasingly deployed in Peace Support Roles and unconventional wars, it is relevant to understand the hitherto unexplored impact of war injuries on the soldier's psyche. The aims and purpose of this study were :

- (a) To screen ocular battle casualties for prevalence of traumatic stress response.
- (b) To study in depth the types of such psychosocial response.
- (c) To find a co-relation with the extent of visual deprivation.

A total of 'X' number of war casualties with severe ocular trauma received over a period of three years were studied. They were previously healthy soldiers engaged in a 'proxy war', which was dominated by artillery, grenades and IED blasts. . They were put through psychiatric evaluation using the guidelines laid down in 'ICD 10 Classification of Mental and Behavioral Disorders'.

Based on this, the psychosocial responses were classified as follows:

(a) Acute Stress Response	:	31-89%
(b) Post Traumatic Stress Disorder	:	14-90%
(c) Adjustment Disorder	:	21-100%

From above figures, it is evident that post traumatic stress disorder is vastly prevalent in victims of ocular trauma. Yet research on such patients all over the world is conspicuously lacking. This study endeavors to highlight the incidence and manifestations such psychiatric morbidity in our soldiers and suggest early involvement of psychiatrists in their holistic convalescence.

BUILDING HEALTH INFORMATION SYSTEM IN THE CONTEXT OF STRATEGIES FOR IMPROVING PUBLIC HEALTH

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Abstract

"Nothing exists until it is measured": Niels Bohr. Advances in information technology enable large volumes of data to be processed and analysed in ever shorter periods of time. Indian Armed Forces are in a position to develop a system akin to developed countries due to existing system of healthcare and reporting. In practice, our present health information system lacks cohesion having developed in a piecemeal way, fashioned by administrative and economic pressures. A new information system is being developed for improving current functionality. It is designed to include data on morbidity, surveillance, mortality, invalidment, bed occupancy state, OPD investigations and procedures, initial medical examination, medical categorization, preventive activities, and dental. The analytical capabilities of the new system include descriptive tables and graphs and statistical analysis of data. An efficient MIS is a necessity for all aspects of health Services in the Indian Army.

LYMPHOCYTE SUBPOPULATIONS IN HIV SEROPOSITIVE AND HIV SERONEGATIVE PULMONARY TB- A PRELIMINARY STUDY IN THE ARMED FORCES

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Abstract

Introduction: Incidence of both pulmonary tuberculosis (PTB) and HIV-PTB Co-infection rank high in India. Knowledge of immunological differences between these two categories will throw light on extent of immunodepletion expected to occur in the latter group.

Material and Methods: Four groups were studied: Group I (HIV alone n=33), Group II (PTB alone n=36), Group III (PTB-HIV n= 30) and Group IV (Normal controls). All patients were freshly detected. Subjects were collected by the method of consecutive sampling. Immunophenotyping of lymphocytes was done using Flowcytometry and viral loads by Roche Amplicor HIV-1 Monitor kit.

Results: Group III had significantly lower mean CD4 cell counts ($212/\text{mm}^3$, $\text{SD}=14.28$ vs. $590/\text{mm}^3$ in Group II, $\text{SD}=9.5$, $P<0.05$ and $832/\text{mm}^3$ in Group IV, $\text{SD}=13.6$, $P<0.05$). Fifty percent in Group III had CD4 counts $< 200/\text{mm}^3$. Mean CD8 counts in Group III was significantly high compared to Group II ($1054/\text{mm}^3$, $\text{SD}=23.6$ vs. $459/\text{mm}^3$, $\text{SD}=15.8$, $P<0.05$). CD4:CD8 ratio was significantly low in Group III (0.183 , $\text{SD}=0.022$) vs. Group II (1.55 , $\text{SD}=0.015$) and Group IV (1.58 , $\text{SD}=0.021$) $P<0.05$ with no statistical difference with regard to Group I (0.31 , $\text{SD}=0.14$). Cases with cavitation had higher average CD4 and CD8 counts. Average viral load in Group III was 701,015 copies/ml with 80% loads $> 50,000$ copies/ml vs. 109,270 copies/ml in Group I with 51.5% loads $> 50,000$ copies/ml. Statistical analysis was done using Two way ANOVA and addressing the interaction terms. Student's 't' test was used to test the pairwise differences.

Conclusion: Mean CD4 counts and CD4:CD8 ratio was significantly low in HIV-PTB dually affected cases compared to seronegative PTB cases, indicating marked immunosuppression. Corresponding high viral loads and larger number with CD4 count $< 200/\text{mm}^3$ corroborate the compromised immune-status. Higher CD4 / CD8 counts in cavitary disease suggest better immune status in this subgroup.

CLASSIFICATION BASED MANAGEMENT OF GUNSHOT WOUNDS

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Due to increasing militancy and counterinsurgency operations, the gunshot injuries have become prevalent both amongst the service personnel and civilians. Traditionally, these injuries have been classified as high energy and low energy depending upon the velocity of the missile. This however, did not convey the exact type of tissue damage. Therefore there is a necessity for classification of gun shot wounds so that definite protocols for diagnosis and management can be outlined to establish more uniform treatment modules. Presently there are two classification systems currently being used, Red Cross Classification System of war wounds and Gugala and Lindsey classification system of gunshot wounds in civilians.

In our centre we have managed 10 cases of gunshot injuries (Thigh 5, Leg 1, Foot 1, Forearm 1, Hand 1, Chest 1). All these were classified as per Guggala and Lindsay Classification system. 10 cases of shotgun injuries involving (Thigh 1, leg 3, neck 1, Cervical spine 1, Chest 1, Multiple sites 3) were also managed. Fractures of the shaft of the femur were managed by wound debridement and delayed Kuntscher nailing in two cases and in one case wound debridement was followed by application of external fixator, subsequently fracture united while patient was on skeletal traction following removal of external fixator. Fracture tibia was managed by wound debridement and application of plaster of Paris cast. Fracture radius was managed by wound debridement, primary internal fixation and bone grafting. Metacarpal fracture required Kirschner wire fixation and fracture calcaneum was managed by wound debridement and Steinman pin reduction.

All fractures united with good functional result. All cases of shotgun injuries were managed conservatively; none required surgery except one case where palpable pellets were removed from penis.

Conclusion : It is concluded that gunshot injuries should be classified for purposes of management and record keeping. Advantage of classification system is that cases requiring surgery can be sorted out and others managed conservatively effectively. The principles of wound ballistics have been outlined.

A PROSPECTIVE STUDY OF SYNCOPAL ATTACKS IN ARMED FORCES PERSONNEL AND THEIR FAMILIES

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215 episodes of syncopal attacks in 195 patients have been studied prospectively in 2 large service hospitals located in Maharashtra over 5 years in order to evolve a comprehensive, cost-effective aetiological approach. There were 135 males and 60 females; the mean age was 55.7 years. History, physical examination and ECG formed the core of work up. Additional work up included various combinations of Echocardiography, stress testing; Holter monitoring and intracardiac electrophysiologic studies in those suspected to have heart disease; EEG, CT/MRI and Doppler ultrasound in those with neurological signs and symptoms; and psychiatric evaluation where required.

In 77(39.5%) patients no aetiology could be established. Among the remaining the commonest aetiologies were : vasovagal syncope (40%), orthostatic hypotension (9.2%), first seizure (4.6%), and cardiac disease (3.5%). The remaining 3% were accounted for by conditions like vertebrobasilar insufficiency, psychogenic, hypoglycemia and micturition syncope.

History, physical examination and echocardiography could establish the diagnosis or guide the work up in nearly 80% of those in whom a cause could be found. The yield of other investigations was low. We conclude that unless indicated by a careful history, a detailed physical examination and ECG, the blunderbuss extensive evaluation of syncope is not cost-effective.

PATTERN OF FATAL INJURIES IN COUNTER TERRORIST OPERATIONS IN J & K: A RETROSPECT THROUGH EMBALMING SERVICES

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Introduction

Peace time planning contributes in a big way to victory in war and requires data based on past experience. Indian Army is involved in one of the longest Counter terrorist operations (CT Ops). Fatal injuries sustained by Indian soldiers during counter terrorist operations in J & K were analysed to evolve data and plan preventive measures.

Material & methods

Mortal remains received for embalming at 92 Base Hospital from Jan 2000 to Dec 2004 were analysed with respect to injuring agent, mode of injury, body parts involved, fatal injury and changing trends.

Results

Fatal casualties accounted for 19.4% of total; Terrorists accounted for 64.4% of deaths; accidents for 21.8%; and environmental factors for 6.9%. Terrorist induced casualties revealed a declining trend while accidental deaths remained static. Firearm injuries contributed to 75.8% of deaths. Amongst terrorist induced fatalities 80.2% were by gun shot wounds and 19.4 by splinters/IED. 26.5% of deaths were due to head injury, 7.1% due to neck and maxillofacial injury, 14.4% due to injury to lungs and 9.9% due to heart injury. Amongst the road traffic accidents, 37% died of head injury and 53% of multiple injuries. With accidental discharge of own weapon, 40% had injury to brain and 29% to hear

Conclusion

There is an urgent need to develop a light weight bullet-proof protection for head, face & neck region and back. We also need to direct our effort towards reducing deaths due to accidental discharge of weapon, road traffic accidents and avalanches.

MANAGEMENT OF LIVER INJURIES IN COMBAT SCENARIO

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Majority of liver injuries in Combat scenario are due to penetrating abdominal trauma. They carry a high mortality because of their very nature, availability of medical facilities and time taken to reach appropriate centres.

65 cases of penetrating abdominal trauma were treated in a tertiary care hospital over a period of three years. Of these 16 had liver injuries. All these patients had emergency surgery.

16 patients of liver injury due to penetrating abdominal trauma were operated and treated over a three year period. All injuries were due to high velocity missiles, either gun shot wounds or splinter injury. The time gap between injury to first surgery was mean 6.5 h (range 4 – 9h). 12 out of 16 patients had injury to other organs of the abdomen, colon being the commonest. The mean blood loss

was 3.5l (range 2 – 5l). The surgical procedures performed for liver injury were hepatorrhaphy in 4 patients, resectional debridement in 6 patients, anatomical resection in 2 patients and damage control surgery with second stage debridement in four patients. 14 patients required ventilatory support in the post operative period for mean 36h (range 24 – 60h). The blood transfusion requirement was mean 6units (range 4 – 17 units). There were two deaths in the series.

25% of patients with penetrating abdominal trauma have liver injuries, usually associated with other organ injury. Early evacuation to a well equipped centre helps in decreasing mortality. Principles of damage control should be used in critically ill patients for improving outcome.

PROBLEMS/LESSONS LEARNT DURING DEPLOYMENT IN HOT WEATHER/ DESERT WARFARE

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INTRODUCTION

Armoured operations are no longer an autumn-winter affair. A short intense desert exercise was conducted in desert during peak summer to test both tps and eqpt and build confidence in self and eqpt. Medical cover was provided by an ADS. The sick report pattern was analysed with a view to learn about disease prevalence in desert warfare.

MATERIALS AND METHODS

This study is based on an actual exercise; the facts and figures therefore, are realistic. Troops had experience of operating in desert and were acclimatized to peak summers by working in Punjab.

Strength	:	1200
Period	:	May – Jun 2005
Total duration	:	15 days
Met data	:	Day temperatures averaged 45°C (Max 52°C)
	:	Frequent sand storms and high velocity winds (>32 Kmph)
	:	Sun Glare from 9 am to 5 pm.

Health education for all ranks helped in creating awareness.

RESULTS

Diagnosis/findings are all clinical, being a field area. Total - 70 patients (Excl surg cases)

<u>Illness</u>	<u>No</u>	<u>%</u>
Loose Motion	28	40%
URTI With Fever	20	28.58%
Eye Irritation	04	5.72%
Heat Cramps	05	7.15%
Scorpion sting	02	2.85%
Skin Disease	02	2.85%
Urticaria	01	1.42%
Pain abdomen	03	4.29%
Miscellaneous	04	5.72%
Heat Exhaustion	01	1.42% (Hospital Admission)

CONCLUSION

No case of Heat Stroke occurred despite contributing environmental factors like high ambient temperature, Sun glare and high wind velocity.

A solitary case of heat exhaustion seen, due to non acclimatization.

Loose motion (GI manifestation) one of the clinical features of high ambient temperature was only 40% as compared to 43%. (Meheta SR et al 1987)

Heat cramps were attributed to fatigue/poor acclimatization.

Dust from dust storms caused irritation of eyes.

LESSONS LEARNT

There is no substitute to health education and motivation.

Acclimatization is a must, like High altitude scheduled.

Bottled/packed cold drinking water with electrolytes helps to prevent ill effects of high ambient temperature.

Past experience in hot weather is helpful.

Protective clothing from insects/snake is a life saving measure.

Protective gears for eyes must be encouraged.

ANEMIA IN RENAL TRANSPLANT RECIPIENTS

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Anemia is a well known complication of end stage renal disease (ESRD), and it has been linked to cardiovascular morbidity and mortality. Although renal transplant recipients (RTR) are prone to experiencing cardiovascular outcomes, little is known about the epidemiology of anemia in this population. Not many studies to date have fully evaluated the associations between posttransplant anemia (PTA) and medications commonly used in RTR, particularly immunosuppressant drugs, angiotension-converting enzyme inhibitors (ACEI) and angiotensin II receptor blockers (ARB).

The objective of the present study is to specifically investigate possible associations between immunosuppressive drugs, ACEI and ARB and PTA.

Detailed medical information was retrospectively collected on 109 RTR on follow up in our transplant clinic. Univariate multivariate linear regression models were used to test for associations between hematocrit (+HCT) and other covariates, and logistic regression models were used to detect independent predictors of PTA, defined as HCT < 33%.

The study population included 96 men and 13 women. The mean time since transplantation was 4.9 yrs. The mean age was 37 years. 35% patients received kidneys from unrelated donors and 65% had received grafts from related donors. The mean HCT among the 109 patients was 36±6; 51.9% of patients had HCT > 36, 19.5% between 33 and 36, 14.4% between 30-33 and 14.2% had HCT < 30. Two thirds of patients (64.4%) had an immunosuppressive regimen that contained both azathioprine and cyclosporin. Twenty patients (28.5%) had received mycophenolate mofetil. ACEI were prescribed in 29.7% of the patients and 6.4% received ARB. Mean creatinine was 1.2 mg/dl. The prevalence of PTA was 28%. Ten percent of all patients were on erythropoietin therapy, but only 41.6% of patients whose HCT was < 30 received the treatment. From multivariate analyses, it is seen that female gender and lower renal function were associated with lower HCT (both $p < 0.0001$). Patients on ACEI had significantly lower HCT ($P = 0.005$) compared with patients without such treatment. In addition, a significant curvilinear dose-response relationship was found between ACEI dose and HCT. Among the immunosuppressant drugs, mycophenolate mofetil ($p = 0.05$) and azathioprine ($p = 0.02$) were associated with a lower HCT.

PTA is prevalent and undertreated in RTR. Azathioprine, mycophenolate mofetil and ACEI are

associated with anemia. Several medications that are possibly modifiable correlates of PTA deserve further study.

REVIEW ARTICLE ON “EPIDEMIOLOGY AND PREVENTION OF STRESS FRACTURES AMONG RECRUITS IN REGIMENTAL CENTRES”

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Introduction: A vast majority of recruits are invalidated out each year due to training injuries. Stress fractures most commonly occur in the lower limbs during running, walking, or marching. Intrinsic risk factors predisposing towards stress fractures are low BMD, lower limb abnormalities, pathologic bone states, menstrual/hormonal irregularities and genetic predisposition. Extrinsic risk factors are excess volume or intensity of training, change in training surface, worn-out/poor quality training shoes, cigarette smoking and inadequate nutrition.

Conclusion: Important preventive measures can be taken like avoiding abrupt increases in overall training load and intensity, taking adequate rest, using orthotics in the shoes and taking proper and nutritious diet.

INITIAL EXPERIENCES WITH MEDICAL ARTHROSCOPY- RESULT OF A RETROSPECTIVE ANALYSIS OF FIFTY CASES PERFORMED BY A RHEUMATOLOGIST

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Abstract

Arthorscopy is an accurate and reliable method for atraumatically examining the interior structure of joints. Medical arthroscopy using a 4 mm scope in the hands of rheumatologists is a safe daycare procedure. It can be performed without tourniquet. Local anesthetic agents Bupivacaine provide an excellent local anesthesia. Females tolerate the procedure better than males. In few cases medical arthroscopy helped in arriving at a final diagnosis but many patients remained undiagnosed. Both the rheumatologists and the pathologists require further experience in this filed.

MALARIA DIAGNOSIS BY LATEX AGGLUTINATION METHOD

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Malaria is one of the most prominent vector borne diseases. Malaria is responsible for 500 million cases of clinical diseases globally and presents a public health problem for 2.4 million people representing more than 40% of the world's population in over 90 countries. Early diagnosis and treatment of parasitemia is vital for the control of malarial infection.

For the detection of malarial parasite techniques like microscopic, non-microscopic and molecular tools are generally used in laboratory and field. Microscopic peripheral blood smears and quantitative Buffy coat and molecular methods like PCR and labeled immunological assay are not used in field. Microscopic examination of blood smear is the golden standard method for malaria diagnosis. Other rapid non-microscopical assays for detection of malarial infection available based on antigen released from parasitized red blood cells. *Plasmodium falciparum* Histidine rich protein-II (HRP-II) is a soluble antigen produced only by *P.falciparum*, but other species including *P.falciparum* can synthesis lactate dehydrogenase (pLDH) which is different from human LDH. HRP and LDH based kits are being used in field for the detection of malarial infection. HRP and LDH based kits are being used in field for the detection of malarial infection. HRP-II gene of *P. falciparum* was cloned, expressed and protein was purified by recombinant technology in *E coli*.

The above protein was subsequently used to make diagnostic reagent where other immunological techniques were involved. Polyclonal antibody coated nano (latex 0.93m) particles were used to detect the HRP-II antigen in the field collected blood samples of suspected malaria cases. The results showed that the antibody coated latex particles was in a position to detect parasite antigen from the field-collected samples and well compared with microscopic and other commercial available kits. The positive samples showed a clear agglutination reaction within 2-3 minutes compared to control samples. There was no agglutinin particles seen visibly in negative samples. This method found to be simple, rapid and cost effective.

HYPOXIA- THE EXPERIENCE IN THE TRANSPORT FLEET OF THE INDIAN AIR FORCE

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Abstract

Hypoxia continues to be experienced by aviators of civil and military aircraft. This study assesses the experience of hypoxia in the transport fleet of the Indian Air Force. The subjects had an age range of 20 to 58 years and flying experience range from 188 hrs to more than 11000 hrs. 34.19% of the transport pilots reported hypoxia in flight at some time in their careers. The reported causes of hypoxia were primarily failure of oxygen systems and loss of cabin pressure. Incidence of hypoxia was higher in younger pilots.

PROTECTIVE EFFICACY OF QUERCETIN AGAINST SULPHUR MUSTARD INDUCED VISCERAL ORGAN LESIONS IN MICE

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Introduction: Sulphur mustard (SM), a blistering agent and a most potent chemical warfare agent, has been used in many instances, and has recently become a threat by the terrorist groups. No effective antidotes are currently available for SM toxicity. SM forms sulphonium ion in the body that alkylates DNA and several other macromolecules, and induces oxidative stress suggesting the beneficial role of an antioxidant in protecting SM toxicity. Quercetin, a bioflavonoid is one of the potential antioxidant with wide pharmacological actions including known protective action to reduce histological lesions caused by oxidative stress. Thus the present study was planned to evaluate the protective effect of quercetin against SM induced histopathological lesions.

Methods: Quercetin (100 and 200 mg/kg, i.p) was administered 30 min prior, simultaneous, 2 hr post or 24 hr post SM exposure (2 LD₅₀ or 19.3 mg/kg) in male Swiss mice followed by two more doses of antioxidant on the subsequent days. SM was administered (in PEG 300) percutaneously at varying doses for survival and protection studies. Histological observations of vital organs were made 7 days after SM administration.

Results: The animals exposed to SM showed mortality at various time intervals, depending upon the administered dose, besides significant loss of body weight in the survived mice. Quercetin administration elicited significant dose dependent protection to the SM exposed mice. The protection was more pronounced when quercetin was administered 30 min prior or during concomitant exposure with SM. In addition to the above, animals exposed to SM showed a decrease in TBARS levels, WBC and RBC counts and haemoglobin after exposure to 2LD₅₀ SM. These results suggest that percutaneous administration of SM can cause lesions distal to the site of application. Further and more interestingly, quercetin administration provided significant protection to tissue histological lesions (spleen, liver and skin) suggesting its role as a potent free radical scavenging agent.

Conclusion: The present results lead us to suggest that (i) percutaneous administration of SM induces oxidative stress and (ii) co-administration of a potent antioxidant like quercetin may protect some of toxic effect of SM.

ANTAGONISM OF CYANIDE POISONING BY ORAL TREATMENT OF ALPHA-KETOGLUTARATE

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Cyanide is a highly toxic suicidal, homicidal and scheduled Chemical Warfare Agent. Due to its wide industrial applications and suspected unscrupulous use by the terrorists, cyanide continues to be an agent of both defence and civil interest. In addition to the conventional antidotes viz. sodium nitrite (SN) and sodium thiosulfate (STS), cyanide antagonism has been shown by numerous other agents. However, most of them are not free from drawbacks. In the absence of an oral treatment for cyanide poisoning, we have initiated work on extensive pharmacological and toxicological studies on alpha-ketoglutarate (A-KG) as a promising oral treatment for cyanide poisoning. A-KG is known to rapidly detoxify cyanide by cyanohydrin formation.

Various studies were carried out to delineate the dose and time response of A-KG (oral) alone or with SN and/or STS on acute cyanide (oral) poisoning in rodents. Effect of A-KG was also evaluated on various biochemical, histological and physiological changes caused by acute or repeated cyanide exposure. To establish the safety of A-KG, its toxicological profile was separately determined in laboratory animals, following acute or repeated exposure. Stability tests on A-KG were also carried out.

Pre-treatment (-10 min) of 2.0 g/kg A-KG which produced 7 to 8 fold protection, was found to be the most effective regimen as compared to other treatments. This protection could be enhanced by 25 to 28 fold by adjunction of SN and STS. At 2.0 g/kg it was effective even when given 60 min prior to cyanide. A-KG was also effective at a dose as low as 0.5 g/kg. Pre-treatment or simultaneous treatment of A-KG significantly attenuated various biochemical and physiological changes caused by acute cyanide poisoning or various biochemical and histological alterations after repeated cyanide exposure. Acute or repeated treatment of A-KG did not produce any change of clinical significance at the doses conferring maximum protection. Also, solution of A-KG was found to be stable for more than one year under refrigerated conditions.

A-KG which has shown spectacular effects in antagonizing experimental cyanide poisoning can be envisaged as a promising oral treatment for cyanide particularly, where other antidotes are contraindicated. Also, A-KG can significantly augment the protective efficacy of other antidotes.

MOLECULAR MECHANISMS OF ACCLIMATIZATION TO HIGH ALTITUDE HYPOXIA : EFFECT OF HYPOXIA MIMETICS

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Hypoxia is a condition that not only develops during high altitude sojourns but also occurs in many medical disorders. The major consequence of hypoxia is the limitations in cellular energy supply. Depending upon the severity of hypoxic insult, progressive intracellular acidosis, edema and sub-cellular organelle damage occur which eventually lead to cell loss, organ failure and death. Although number of studies have focused on physiological and biochemical mechanisms of high altitude acclimatization, little is known about the molecular mechanism of acclimatization to hypoxia.

The present work is based on our recent studies focused to understand the genes involved in facilitating acclimatization to hypoxia and modalities to modulate their expression. It has been well documented that a transcriptional factor hif-1 α , which is commonly known as master gene, controls all the genes such as EPO, VEGF, NOS, HO-1, GLUT-1 etc that promote acclimatization to hypoxia. Cobalt has long been used as hypoxia mimetic which stimulates the expression of a number of genes involved in hypoxic response. Oral feeding of CoCl₂ (50 mg/Kg) for 5 days was found to significantly enhance the gasping time and hypoxic survival time by about 3-4 times in rats. There was a significant decrease in transvascular leakage in lungs and brain of rats fed with CoCl₂ as compared to control on exposure to simulated hypoxia of 32000 feet. Further, supplementation of CoCl₂ resulted in significant increase in anti-oxidant levels and decrease in lipid peroxidation in brain and lungs when rats were exposed to 2 days of continuous hypoxia as compared to the control group. The biochemical and molecular mechanism involved in CoCl₂ induced acclimatization will be discussed.

COGNITIVE FUNCTIONS AT HIGH ALTITUDE

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Substantial impairment of cognitive functions such as mental skill, vigilance, memory and logical reasoning and psychomotor performance in terms of reaction time have been observed at altitudes above 3000 m. There are reports which also suggest that short-term memory, is impaired at High Altitude (HA) especially at extreme altitude. HA exposure has been shown to induce oxidative stress. Brain structures are most vulnerable to the oxidative stress specially hippocampus which is involved in memory. It is hypothesized that HA induced oxidative stress may lead to neuronal dysfunction or degeneration leading to memory impairment at HA. Studies were conducted in-vitro and in-vivo models to assess hypoxia induced oxidative stress and loss of spatial memory and their amelioration by supplementation of NAC, ALC and bacosides.

In-vitro studies were conducted by exposing primary culture of hippocampal nerve cells to hypoxia for 3 hrs. Results showed significant increase in ROS and decrease in antioxidant levels indicating hypoxia induced oxidative stress. In rats exposed to simulated hypoxia of 6100 m for 3, 7 and 14 days, the spatial memory, morphological changes, oxidative stress markers in hippocampal region were studied. Results indicated an increase in lipid peroxidation and decrease in the antioxidant levels in hippocampus region. There was deficit in spatial memory. Supplementation of NAC, ALC & Bacoside resulted in amelioration of these effects. The results of the present study indicate the involvement of oxidative stress in the loss of spatial memory during HA exposure which can be ameliorated by supplementation of antioxidants such as NAC, ALC and bacosides.

BODY COMPOSITION AND MORBIDITY STATUS IN INDIAN AIR FORCE POPULATION: NEED FOR RECALIBRATION OF HEIGHT- WEIGHT CHART

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Last three decades have seen burgeoning body of evidence of association of many diseases with excess body weight or obesity. Therefore there is a need of defining not only ideal body weight, but also body composition for a given population.

Measure of ideal weight that has been in practice in armed forces including IAF were all based on stature without taking into consideration the role of body composition and were based on general population surveys. Thus there was an acute need to form ideal weight standards for Indian Air Force personnel to assess their health status, which is based not only on stature but also on body composition.

An attempt has been made to develop height- weight relationship for healthy Indian population for normal values of body mass index (BMI), waist hip ratio (WHR) and percent body fat for different age groups. The data on anthropometric and body composition parameters were collected on a sample of 7587 of mixed ethnic origin from Indian Air Force (IAF). A regression analysis was performed and weight was predicted as a function of height for IAF personnel. Standard error of estimates of body fat percent were less as compared to that of BMI and WHR. Based on the constructed relationships it was found that 72%, 75.9% and 60.8% of the Air Force was found to be normal with respect to percent body fat (less than 20%), BMI (18-25) and WHR (less than 0.9) respectively.

Many of the studies have found a strong association of percent body fat with metabolic disorders. Therefore, in this study tables based on percent body fat were considered to be the principal factor in determining ideal body weight and its permissible range. This recommendation has been implemented by IAF for its use in all assessments of over weight status and associated morbidities from January 2006 onwards.

EVALUATION OF AUTOJECT INJECTOR PERFORMANCE AGAINST NERVE AGENT TOXICITY

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Nerve agents inhibit the enzyme acetyl cholinesterase resulting in the accumulation of the neurotransmitter acetylcholine, and the symptoms are due to the over stimulation of the muscarinic and nicotinic receptors. The symptoms are papillary constriction, increased secretions in glands, tremor, convulsion and death due to respiratory paralysis. To prevent the toxic effects of the nerve agents, atropine and pralidoxime chloride are to be administered immediately. For the quick and effective delivery of the drugs, autoject injectors are designed. The effect of atropine autoject injector in protecting the papillary constriction induced by nerve agent sarin, can be used as one of the performance evaluation of the autoject injectors.

Sarin is diluted in normal saline and 3 to 5 ug/kg was instilled in one of the eyes of the rabbits. The papillary diameters of both the eyes were measured using a vernier caliper before and after the instillation of sarin. Thirty minutes after sarin instillation, atropine is administered through the autoject injector at the gluteal region of the rabbits (about 2mg). The papillary diameter was measured to assess the recovery.

The papillary diameter was decreased to less than 25% of the original diameter in the sarin instilled eye within 10 min, without any change in the other eye. No other toxic symptoms were observed. Administration of atropine through the autoject injector reversed the effect within 20 min. The other eye also was dilated after the administration of atropine through the autoject injector. This single inject of atropine was sufficient to protect the toxic effects of low dose of sarin.

Administration of atropine through the autoject injector is an effective way of counteracting the toxicity of nerve agents.

LV FUNCTION ASSESSMENT IN OBESITY

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Obesity is associated with increased cardiovascular morbidity and mortality. A direct effect of isolated obesity on cardiac function is not well established. Study was designed to determine the direct effect of different grades of isolated obesity on echocardiographic indices of systolic and diastolic left ventricular function.

Fifty one obese and 25 normal weight serving personnel were studied. They had no other pathological condition. Group I consisted of subjects with normal weight (n=25, body mass index (BMI) ,25), group II consisted of overweight subjects (n=34 BMI 25-29.9 kg/m²), and group III consisted of obese subjects (n= 17 BMI >30 kg/m²). Echocardiographic indices of systolic and diastolic function were obtained, and dysfunction was assumed when at least two values differed by >2 SD from the normal weight group.

Ejection fraction, fraction shortening were increased ($p < 0.05$) in group II and III. Left ventricular dimensions were increase ($p < 0.001$) but relative wall thickness was unchanged. Systolic dysfunction was not noted in any of the obese patients. The mitral valve pressure half time ($p < 0.01$) and the left atrial diameter ($p < 0.001$) were increased and the deceleration slope was decreased ($p < 0.01$) in obese subjects, all other diastolic variables were unchanged. No difference were found between obesity subgroup. Sub clinical diastolic dysfunction was more prevalent among obese subjects. BMI correlated significantly with indices of left ventricular function.

Sub clinical left ventricular diastolic dysfunction was noted in all graded of obesity and correlates with BMI.

RADIOLABELING OF HONEY DERIVED FROM HONEYBEES (APIS MELLIFERA) WITH ECHNETIUM-99M FOR ITS POTENTIAL APPLICATION AS A BACTERIAL INJECTION IMAGING AGENT

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The use of natural products in treatment of injections and in enhancement of wound healing is a common practice in many parts of the world. However, there are many natural products like honey, which although have been used since ages as a remedy to combat various diseases including bacterial infections, have however, escaped extensive research by pharmacologists, thereby not getting their due place in modern medicine. The present study was therefore, undertaken to exploit the well-known antibacterial properties of honey for detecting bacterial lesions using nuclear medicine techniques. Honey derived from honeybees (*Apis mellifera*) was radiolabeled with technetium-^{99m} (^{99m}Tc) and investigated in animal model infected with *Staphylococcus aureus* in the thigh muscle for its efficacy in detecting and localizing the bacterial lesion.

The studies, which we have carried out, show promising results in animal model, suggesting that ^{99m}Tc-labeled honey has the potential to become an important bacterial infection –imaging agent.

MOBILE MEDICAL COMBAT TEAM (MMCT) : A CONCEPT

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During the hostilities many times small independent units move fwd (to about 30-50 km of LOC) whose medical manpower consists of one med asst only. It could so happen that an Unit loc in the fwd area may have a large no. of casualties caused by the enemy action. Generally such Units have only one med asst with necessary supply of medicines which would not be able to cater to the need of the casualties. In such an eventuality it would require an independent med unit which could be mustered to take on the task of a casualty evacuation unit at a short notice. Such a Unit would be termed as the Mobile Medical Combat Team (MMCT), which should be able to provide resuscitation, emergency treatment and cater for detention of at least ten serious casualties for twenty-four hours before planning evacuation by air/road. Such team will be loc at large Medicare Centres in major fwd bases. The MMCT will consist of MO-one (team leader), and eight staff comprising nursing assistants and operation

room assistants. They should be trained in pitching tents, handling communication sets and well trained in first aid procedures. Most important requirement is that they should be well rehearsed to work as a team. The team members have to practice their complete simulated drills with all equipment every three months. The MMCT will be so equipped that it could sustain itself and the casualties for about 24 hours and plan casualties evacuation and retrieval, not with standing possible complete/serious destruction/devastation of the of the unit to which the casualties belong. Such team also could be put to use in mass casualties management.

MEDICAL PREPAREDNESS CHEMICAL TERRORISM - AN OVERVIEW

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The threats of chemical attack by terrorist are real, even though such incidents may be few. It can cause large number of casualties with minimum logistic requirement. Chemical weapons are easy and cheap to produce and can be used selectively to target humans.

Chemical agents especially nerve agents are highly lethal and large number of casualties may die unless care is given immediately after an attack. Sarin is most volatile nerve agent, therefore it is considered terrorist favoured agent. The other agent such as mustard and lewisite may be more incapacitating than lethal, putting affected soldiers out of action for months. Pretreatment by NAPS tablets delayed the dangerous symptoms in nerve agent attack and patient gets time to go to hospital. Self-aid by Atropine and Oxime auto injectors are highly effective in field conditions. In case of blister agent attack early decontamination with fullers earth in liberal quality, washing with organic solvent (Kerosene) followed by soap water for 30 min would be the first aid. Liquid in eye should be rinsed by water/ normal saline. Topical and oral antibiotics are to be used to prevent infection. Creating NBC Awareness and use of improvised method will go a long way in protection against chemical attack.

It is always possible to minimize casualties and restore combat potential by prompt protection and early institution of correct effective treatment, therefore it is imperative to provide NBC protective equipments for personnel involved in management of chemical casualties. Thus it calls for an urgent need for preparing comprehensive and realistic plan to effectively respond to any deliberate release of chemical agent.

OUTPATIENT PRESCRIPTION PATTERNS IN A TERTIARY LEVEL SERVICE HOSPITAL.

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ABSTRACT

Evaluation of prescribing habits of physicians is required from time to time so as to provide inputs regarding drug utilization patterns, rational use of drugs, common lacunae in everyday prescribing and the factors influencing each of the above. The present study is one such effort with an emphasis on the latter objective, performed in the setting of a tertiary level service hospital.

[The data for the study was collected from the dispensary of the hospital. 250 outpatient prescriptions were collected. These prescriptions were analysed for the following: Average number of drugs per prescription. ; Proportion of drugs prescribed by proprietary names vs. nonproprietary names ; Category-wise frequency of drugs prescribed ; Common prescribing errors.

Average number of drugs per prescription: 3.0 ; Range of number of drugs per prescription : 1-10; Proportion of drugs prescribed by non-proprietary name: 37.75 %; Category-wise frequency of drugs prescribed: Analgesic- Anti inflammatory agents were the most frequently prescribed agents, followed by antihypertensives, vitamins and antimicrobials; Common errors in prescriptions:- Diagnosis not mentioned :19.18%, Patient's particulars incomplete: 9.58%, Doctor's particulars omitted: 4%, Irrational combinations: 12%

The issues we wish to highlight in the present study relate to those prescribing practices which deviate from the standard teaching in this regard. A system of regular monitoring of prescribing practices followed by feedback to practitioners at the departmental or institutional level may serve to sensitise practitioners towards the need for greater awareness in this regard .

“IDENTIFICATION OF SINGULAR AND DUAL INFECTIONS CAUSED BY DISTINCT SUBTYPES OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 IN ARMED FORCES PERSONNEL AND THEIR FAMILIES - BY HETERODUPLEX MOBILITY ASSAY (HMA)”

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Abstract

Introduction: Rapidly evolving viruses such as HIV-1 develop marked sequence differences in their genome over the course of an epidemic and also in individuals infected for longer duration. This is because of the error prone Reverse Transcriptase (RT), which rapidly incorporates mutations resulting in genomic diversity, altered cell tropism, immune escape, and variable resistance to antiretroviral drugs. The best strategy for controlling the menace of HIV remains the development of an efficacious prophylactic vaccine using the most appropriate (antigenically related) subtypes.

Materials and methods: Heteroduplex Mobility Assay (HMA) is a rapid and reproducible technique, based on the principle of determining the genomic relatedness and divergence of the unknown sample mixed with equal volume of the known reference plasmid HIV-1 subtypes and studying the mobility patterns of the resulting heteroduplexes formed on the polyacrylamide gel.

Results: A total of 70 HIV-1 seropositive samples obtained from Armed Forces personnel and their families were analyzed and their subtype distribution studied. 66 [94.28%] were HIV-1 sub-type C, 2[2.85%] were sub-type B. In 2 samples [2.85%], the subtype distribution was homotypic recombinant i.e., one each of subtype C1 & C2 and C2 & C4 respectively.

Conclusion: Personnel from the Armed Forces and their families represent a divergent population from different regions of India. Analysis of the subtypes in these HIV-1 seropositive individuals will help immensely in understanding the geographical distribution and the biological evolution of the virus. Determination of HIV-1 subtypes has significant implications for development of candidate vaccine for India.

MANAGEMENT OF MALOCCLUSIONS AND DENTOFACIAL DEFORMITIES OF ADULTS

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In recent years, increasing number of adults are seeking consultation for treatment of malocclusions and dento-facial deformities. The management of the same, tends to be difficult and technically demanding. The absence of growth means that growth modification to treat jaw discrepancies is not possible. Only possibilities existing are tooth movement for camouflage, restorative & periodontal needs and orthognathic surgery. Adults have different motivations for seeking orthodontic treatment and different reactions to it. This has prompted us to highlight the problems and its management.

Out of a total number of 667 Orthodontic patients treated in a period of 37 months, 174 (26.08%) were adults. These cases with wide range of malocclusions and Dento-facial deformities were treated with removable, fixed orthodontic appliances and a combination of orthodontics and surgery/distractor osteogenesis as per the indications. 94 patients underwent comprehensive orthodontic treatment while 13 patients were provided orthodontic-surgical treatment. 67 patients had undergone adjunctive orthodontic treatment for periodontal and restorative needs.

Varied kind of malocclusions and Dento-facial deformities were treated. Significant ($P < .001$) number of female adults availed orthodontic treatment on comparison with gender distribution among total orthodontic cases. Empirical appraisal of over all results of cases who underwent comprehensive and surgical orthodontic treatment showed gross improvement in profile, Dento-facial aesthetics, occlusion and self esteem. 09 cases (5.17%) required comprehensive orthodontic treatment to address periodontal problems in addition to Dento-facial aesthetics. All these cases underwent phase-I periodontal therapy and flap surgery to remove all granulation tissue before orthodontic treatment. 03 cases (1.72%) required osseous grafting following orthodontic treatment. Radio graphic appraisal of the above cases after 06 months showed improvement in bone height and mobility. A good oral environment for maintaining oral hygiene was achieved. We had complications in 03 (1.72%) cases in the form of multiple periodontal abscess due to poor compliance and probable reaction to orthodontic appliances. 4% of patients were lost to follow up.

Malocclusions and Dentofacial deformities can affect dentofacial aesthetics, function and psychosocial needs in adults. The development of newer techniques, better understanding of the biologic basis of tooth movement has made it possible to treat adult of varying age groups with varied malocclusions. If the expectations are realistic and goals set are achievable it is indeed a rewarding experience for us as well as for the patients.

AUTOMATIC COMPRESSION BAG FOR HIGH ALTITUDE MALADIES

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Indian soldiers are deployed up to altitudes of 21000 ft, which makes them susceptible to diseases associated with hypobaric hypoxia like Acute Mountain Sickness, High altitude Pulmonary Edema and High Altitude Cerebral Edema. When these disorders occur in remote location, placing them in a pressurized bag to effectively reduce the altitude immediately is life saving specially in inclement weather when cas-evac is delayed. Indigenously made automatic compression bags were evaluated in this centre and the aim of this presentation is to highlight the protocol and discuss the results. Each automatic bag comprised of the bag, battery with inverter and a compressor with automatic pressure

control unit. The automatic bag performance was compared to that of the manual bag. Both the bags were tested at three different heights i.e Leh (11200 ft).South Pullu (15330 ft), Khardungla (18380 ft). The physical characteristics and functional integrity of both chambers were compared. Both chambers were put to test with and without subjects. The variables studies included time taken for the bag to inflate, effective altitude achieved, heart rate and SaO₂ of the volunteer in the bag and a subjective comfort index. Other relevant variables like voltage drop in the battery during bag inflation and storage at low temperatures were also noted. The automatic bag rated higher in terms of ease of use, effective altitude achieved, subjective comfort index and the end Heart rate and SaO₂ values achieved. The only drawback of the automatic bag is the total weight which makes it unsuitable for trekkers, however the same can be placed at various camps and posts receiving casualties and used as an effective treatment modality for high altitude maladies.

A COMPARATIVE STUDY OF CLINICO – HISTOLOGICAL EVALUATION OF VARIOUS METHODS OF LIMBAL STEM CELL TRANSPLANTATION FOR OCULAR SURFACE RECONSTRUCTION AND SUBSEQUENT PENETRATING KERATOPLASTY IN CASES WITH LIMBAL STEM CELL DEFICIENCY

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Ocular surface disorders is an entity that encompasses all the disorders due to mechanical, chemical and toxic insult of the ocular surface as well as due to systemic conditions leading to dry eye. Limbal stem cell deficiency is supposed to be the key factor in development of ocular surface disorders hence the treatment is directed towards this cause. The aim of this study is to evaluate the efficacy of various methods of limbal stem cell transplantation including amniotic membrane transplantation, conjunctival and cadaveric limbal stem cell transplantation as treatment modality in cases of ocular surface disorders.

A prospective study of the response of 60 cases following amniotic membrane transplantation, cadaveric limbal transplantation as well as conjunctival transplantation was carried out at a tertiary Military eye center. The duration of the follow up ranged from 6 months to 18 months. The results were analyzed for 20 cases each of amniotic membrane, conjunctival and cadaveric limbus transplantation followed by Penetrating keratoplasty were compared with 20 patients in the control group who underwent Penetrating keratoplasty alone.

Majority of the population was in the age group of 21 – 50 yrs with both cases and controls being 70% of the study group, which indicates an increased risk in this bread earning age group. The most common etiology in our study was infectious keratitis (38.33%) cases and (15%) controls Vascularization was present in 45 (75%) of cases preoperatively while postoperatively it decreased markedly up to 10(25%). All the groups of cases showed a significant improvement in visual acuity with the number of patients having a visual acuity of 6\60 or better improving from 12 (20%) cases preoperatively to 30 (50%) .It included 11(55%) in AMT, 12(60%) in Cadaveric limbal group where as 7 (35%) following conjunctival stem cell transplantation respectively. The main postoperative complications among cases were persistent epithelial defects, graft failure, Descmatocoel, Uveitis, Scleral thinning, Dellen and neovascularization.

In conclusion , Ocular surface reconstruction with limbal stem cell transplantation is an effective way of improving the anatomical as well as the functional structure of the conjunctival and corneal surface in terms of improved tear film status, decreased vascularization, preventing conjunctivalization of the cornea, and a decrease in subconjunctival fibrosis. AMT is effective in mild to moderate ocular surface disorder and conjunctival and cadaveric stem cell transplantation is effective in all grades of ocular surface disorders.

SPLENIC INFARCTION IN HIGH ALTITUDE AREAS

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Splenic Infarction in high altitude is an interesting, intriguing and uncommon phenomenon seen in troops freshly inducted into high altitude. It is a result of patients having sickle cell anemia or sickle trait. Patients present with pain in the left hypochondrium at a variable time after induction or even after reinduction. The pain is localized to the left hypochondrium and occasionally radiating to the back or left shoulder tip. It is associated with fever, anorexia, nausea and constitutional symptoms. There may be fever, tachycardia, tachypnoea and guarding in the left hypochondrium extending on to the epigastrium. Thumping over the left rib cage elicits severe tenderness. It can be mistaken for a perforated gastric ulcer. The novice surgeon would be prompted to explore the open up the patient. The patients usually settle down after 7-10 days unless the infarcted areas go on to form abscesses when the fever becomes hectic, patient develops features of toxemia with tachycardia, tachypnoea, anorexia and weight loss.

Investigations early on after the onset of the pain may be inconclusive. A plain X-ray chest may reveal a slightly elevated diaphragm on the left side and no free gas. X-ray abdomen may show fixed bowel loops suggestive of ileus in the left hypochondrium. Ultrasound (USG) may not reveal any abnormality in the initial stages but later (after 24-48 hours of onset) shows patchy areas of hypo-intensities suggestive of areas of infarction. These become more distinct with the progression of time and may go on to form abscesses. There may be associated large reactionary perisplenic collections which can get infected. CECT is also helpful in the diagnosis.

Over a period of 02 years the author had an experience of 04 cases who presented with acute left sided abdominal pain and were found to have splenic infarction. They presented soon after induction. While 01 patient underwent abscess drainage, 01 underwent splenectomy and the other 02 could be managed conservatively. Sickle cell trait was positive.

CLINICAL PROFILE AND MANAGEMENT OF CHEMICAL WARFARE

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Management of exposure to chemical warfare agents has long been part of a remote area of clinical practice, confined essentially to military specialists. But the world is fast changing and it is important for all to understand the pathophysiology and clinical profile of these agents to effectively devise a management strategy. The management of chemical warfare agents is a process continuing from the site of release to the hospital. It requires advanced life support and various specialized skills. . Their

release poses a risk to medical responders, and they should be trained and equipped to operate safely in a contaminated or infected zone. They affect respiratory and nervous system and epithelial and cellular systems after sometime. Compounds like sarin and insecticides such as fenthion affect the central and peripheral cholinergic nervous systems. Intermediate syndrome is obvious fallout and this along with long-term neural attack though neurotoxic esterase inhibition needs respiratory and neurological support. A number of possibilities have been advanced to explain the origins of the Intermediate Syndrome. These include neuropathy and myopathy together with pathophysiology of the neuromuscular junction itself. Phosgene is unique among chemical agents in that it has been used as a chemical warfare gas and also has major industrial applications at the present time. Besides this, vesicants, pulmonary edemagens, cyanides, and certain toxins pose the greatest hazard in civil releases. The number of agents is ever increasing. Lessons of Bhopal and similar accidents have immense value for the management of increasing number of accidental and deliberate toxic chemical exposure that comprise the greatest risk for human life in the 21st century.

OPERATION SADBHAVANA : THE 'WHAM' MILITARY STRATEGY

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Introduction

'Sadbhavana' literally means 'goodwill amongst people'. The Indian Army has evolved the military strategy of winning hearts and minds (WHAM), with this being just a phase in the broader 'war on terror'. The neglected populace of the border regions of Ladakh, have been targeted in an aggressive campaign to bring them back into the mainstream. The various key areas of OPERATION SADBHAVANA, the ongoing military campaign to win over the people of Ladakh, have been glossed over in this paper. The military medical units have played a pivotal role in providing comprehensive health care which is a keystone of the strategy. The endeavours of the doctors in uniform, to monitor the existing health care system and provide succour to the local people, have succeeded in winning over an alienated population, who had felt neglected for decades.

Results

A total of 163 medical camps were held in 2004 with an attendance of 14050 patients seeking medical attention and 264 people dental attention, while in the current year 87 camps have been conducted, with an attendance of 7562 and 559 respectively.

Conclusion

The WHAM military strategy has paid rich dividends in the form of change in perspective of the denizens of the remote and exotic locales of Ladakh. Better intelligence gathering, an inconducive environment for militancy to flourish and the enormous goodwill for the 'protectors of the realm' are just some of the rewards that have been reaped from the tactic of sustainable promotion of health and prevention of disease amongst the people.

CLINICAL EVALUATION OF TREATMENT MODALITIES IN MANAGEMENT OF COMPLEX DENTOFACIAL DEFORMITIES

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Dentofacial deformities can cause functional, esthetic and psychosocial problems. Recent biological research and technical advances, such as distraction osteogenesis have resulted in notable treatment possibilities in orthodontics and dentofacial orthopedics.

Treatment of complex craniofacial deformities requires three-dimensional concept of tooth and bone position. Skill and judgment are required to determine when a particular case would require orthosurgical intervention. Aim of this paper is to compare different modalities in treatment of complex dentofacial deformities.

A total of 80 patients with various types of dentofacial deformities were examined. A team consisting of orthodontist and maxillofacial surgeons did treatment planning. Treatment strategy consisted of either dentofacial orthopedics and orthodontics or orthodontics combined with surgery/distraction osteogenesis. Pre and post surgical orthodontics was done. Intra oral and extra oral photographs, pre and postoperative /Cephalograms after one year duration.

In growing children, dentoskeletal deformities of moderate degree were treated with stable results using dentofacial orthopedics. In severe skeletal deficiencies, orthodontics along with distraction osteogenesis resulted in correction of up to 18mm discrepancy. In cases having skeletal excess treatment was delayed till completion of growth. After detailed planning, presurgical orthodontics was carried out to decompensate the skeletal defect. Post surgical orthodontics was always essential to ensure stable results.

Severe dentoskeletal deformities require presurgical evaluation and treatment planning by a team consisting of orthodontist and maxillofacial surgeons. Cephalometric treatment planning and orthodontics is essential for success and stability of results. For skeletal excess conventional surgery combined with orthodontics was the treatment of choice. For skeletal deficiencies in early age dentofacial orthopedics and for more severe cases orthodontics combined with distraction osteogenesis was the treatment of choice.

MELANOTIC NEUROECTODERMAL TUMOUR OF INFANCY SURGICAL MANAGEMENT

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Introduction

Melanotic neuroectodermal tumour of infancy is a rare paediatric neoplasm. Surgical excision is the commonly accepted mode of therapy. This unfortunately leaves behind severe deformity and growth related dyssymetry. We report here a case treated at our center with excellent functional and cosmetic results.

The case

Five month old female child was brought with a rapidly growing mass of the right maxillary

region. CT scan showed the lesion to involve the right upper alveolus, adjacent palate, and anterior wall of the maxilla. There was no soft tissue extension or metastasis. Biopsy was reported as Melanotic Neuroectodermal Tumour of Infancy.

Problem faced was of a 5 month old child in whom surgery was likely to produce severe functional impairment and facial dyssymmetry.

Surgical excision was done with preservation of the lateral palatal flap and excision of the lower part of the right maxilla and the adjacent tumour bearing palate. The buccal mucosa and the palatal mucosa were sutured together to obturate the palatal defect. Post op recovery was uneventful. The child is under periodic review and has no deformity.

Discussion:

MNTI is a rare lesion of the growing skeleton. It is a benign tumour with rapid growth potential. Surgical excision is the mainstay of therapy. Surgical excision is frequently deforming and disfiguring due to the removal of growing facial skeleton resulting in functional and social handicap. Surgical excision must always be accompanied by enthusiastic and energetic prosthetic and orthotic support.

Chemotherapy is not known to be effective in management of these lesions. We report a case with good functional and cosmetic outcome.

SPECTRUM OF DIABETES PRESENTATION IN INDIAN ARMED FORCES

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Diabetes mellitus is assuming epidemic proportions in India. The prospective observational study is being conducted in Army Hospital R&R to determine spectrum of diabetic presentation in Armed Forces personnel. Forty eight newly diagnosed patients during last 18 months were evaluated. Average age of patients at time of diagnosis was 31.7+9.5 years (19-54), height 170.6+5.7 cms (159-180, weight 64 + 13.2kg *42-98), Body mass index (BMI) 22+4.2(13-31, waist-hip ratio 0.86+0.081 (0.76-1-2). Family history of diabetes was found in 22 (45%) patients. Majority of the patients had osmotic symptoms 15 (31%) and ketosis 14 (29%), while incidental detection during annual medical examination 13 (28%), ischemic heart disease 5 (10%) and obstructive sleep apnea 1 (2%), was found in other. Average age of ketotic patients was 21.4 (19-20) years with BMI of 0.80 (0.6-.86). Glycaemic assessment: Fasting plasma glucose (FPG) 185.2+48.5(128-322) mg/dl, Random plasma glucose 255+94.16 (162-552) and HbA1c (29 patients) 10.1+1.69 % (7.9-14). Lipid profile: LDL 136 +16.1mg.dl (98-168), HDL 37.8+3.7. mg/dl (3044), Triglycerides 285+68.4 mg/dl (198-164). The osmotic symptoms and ketosis are common modes of presentation, which can be considered as surrogate markers of pancreatic B cell secretory dysfunction being predominant defect in pathogenesis.

MANAGEMENT OF COLD INJURIES IN HIGH ALTITUDE – A PROSPECTIVE STUDY

Lt Col P K Hota
Armed Forces Medical Services, India

Cold injury is a major health hazard and serious medical problem for Armed Forces, deployed in high altitude snow bound areas. There are a number of treatment protocols available for the management of cold injuries. In this prospective study, a standard treatment protocol was devised to manage all degrees of cold injuries to get a better result.

234 cases of cold injuries were studied over a period of 2 years, among the troops deployed in high altitude areas from Drass to Siachin glacier. All the cases were serving Army personnel from age group of 18 to 50. There were 23 cases of Chilblain and 211 cases of Frostbite of different degrees. The designed regime constituted of rewarming, Pentoxifylline, Soluble Aspirin, Ibuprofen and local wound care for a period of 4 to 6 weeks depending on degree of cold injuries. Deep frost bite cases were subjected to Hyperbaric Oxygen therapy in addition to the scheduled protocol.

The recovery period was 2 to 6 weeks depending on the severity of the cold injuries. Healing in all the cases was satisfactory. Minor debridement was required in 35 cases of III^o Frost bite. All 5 cases of IV^o Frost bite required limited amputation of the affected digits. There was no mortality. Morbidity was low with this protocol. 2 to 3 years of follow up showed no significant residual effects of cold injuries.

Early recognition and prompt treatment at each level of medical attendance is of paramount importance in the management of cold injuries. The treatment protocol was proved to be effective in the management of all degrees of cold injuries found in high altitude, reducing morbidity and mortality and saving the limbs.

MANAGEMENT OF MISSILE INJURIES OF THE BRACHIAL PLEXUS

Lt Col Prem Singh Bhandari
Armed Forces Medical Services, India

Missile injuries of the brachial plexus are a challenging group of peripheral nerve lesions. In recent military conflicts they constitute approximately 2.6% to 14% of all peripheral nerve injuries. In the past these injuries were generally considered to have a poor prognosis and a non-operative approach of waiting for spontaneous recovery was advocated. The advent of microsurgical techniques, application of intraoperative methods to evaluate the nerve lesions and advanced technique of nerve repair has improved the outcome of brachial plexus reconstruction in the last two decades. However, there is little information available on the treatment of war injuries of the brachial plexus. The purpose of this paper is to report the experiences gained in treating 22 patients with penetrating missile injuries at Army Hospital (Research & Referral) Delhi Cantt.

Out of 22 soldiers, 17 patients underwent surgery at a mean of 4 months (2 months to 2 years) after the injury. The indications were no return of function in the paralyzed limb and severe and intractable pain. No operations were performed in 5 patients showing neurological recovery. Neural elements were grafted at three levels: root and trunk level (3); cord level (5); and branch level (2). Microneurolysis was done in 4 patients in whom the injured nerve was in continuity, but engulfed in scar tissue. Nerve transfers were done in 2 patients, in whom the proximal root stumps were severely fibrotic and not suitable for grafting. One patient with previous failed repairs was treated by free functioning muscle transfer, 2 years after the injury. All patients were followed up to two years after surgery. Good or useful results (return of power, sensations and relief from neurologic pain) were obtained in 70% of cases. Poor results were observed after repairs of the medial cord and ulnar nerve.

Our results suggest that a vigorous approach is justified in the treatment of missile injuries of the brachial plexus. Primary intervention is mandatory when there is evidence of a vascular lesion. Secondary intervention, usually 2 to 3 months after injury, is indicated when there is no recovery of function which is many times associated with severe pain syndrome.

The overall results achieved after repair of C5, C6 and C7 roots, and the lateral and posterior cords, highly justify a timely surgical intervention in brachial plexus palsy following missile injuries.

A STUDY OF STRESS FRACTURES AMONGST MILITARY RECRUITS IN INDIA

Lt Col Rajendra Harnagle, Maj TK Rath, Brig Surjit Singh
Armed Forces Medical Services, India

Abstract

Introduction.

A retrospective analysis for a period of five years was carried out.

Materials and methods.

The pattern of stress fractures amongst military recruits in three regimental centers were studied located in central India.

Results

Maximum stress fractures were found in 19 Year olds.. Infantry recruits were significantly more affected and of these the incidence in Muslim recruits was more. Most stress fractures occurred within 6 months of training.

Conclusion.

Overall stress fracture ranges from 1.08% to 2.18%.

PILOT STUDY ON SCREENING AND INTERVENTION FOR PREVENTION OF ALCOHOL DEPENDENCE AT UNIT LEVEL

Lt Col R Shashikumar
Armed Forces Medical Services, India

Alcohol and Army have been related to each other since ages. To prevent loss of well trained soldiers to the scourge of alcohol and minimize stigma related to seeking help for it, the work place provides an ideal location for intervention that is to be implemented by unit personal.

All personnel in two units were screened using AUDIT scale. Those scoring ≥ 9 were included in the study. Brief intervention in the form of biotherapy was implemented in one of the units. Evaluation was done using AUDIT scale at end of 8 months, measuring various other parameters such as sale of liquor, number of disciplinary cases, and number of admissions related to alcohol.

At the end of 8 months there was a significant decrease ($p < .001 @ CI 95\%$) in the AUDIT score and other parameters in the unit where the intervention was implemented.

Biotherapy in anon confrontational atmosphere under supervision and on a continuous basis at workplace itself provides a significantly new and effective approach to tackling alcoholism in the armed forces. These and other aspect of the study are discussed in the paper.

BOXING INJURIES OF NOSE IN CADETS- A STUDY

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Abstract

Incidence of injuries to the nose in cadets participating in boxing was noticed to be higher compared to properly trained boxers facing competitive matches, such as at Area or Command level. Twenty two cadets sustained Nasal bone fracture due to boxing in 1996 and fifteen in 1997. There was only one case of septal haematoma in 1996 but there were 7 cases in 1997. The causes for this increased incidence were studied. Cadets with fractures of the nasal bone were referred early but cadets with cartilaginous injuries and septal haematomas were sent late. Inferior quality of gloves, poor training, and increased number of rounds besides lack of rest for the cadets contributed. Remedial measures helped to drastically reduce the incidence in the following years. It is recommended that any nasal injury should be assessed by an Otolaryngologist at the earliest to reduce complications and avoid tedious rhinoseptoplastic procedures at a later date. A Septal haematoma should be specifically looked for, treated as an emergency and while filling injury reports this should be labelled as 'Grievous'.

OBESITY AND EXERCISE

Lt Col RK Khajuria
Armed Forces Medical Services India

Abstract

Obesity is considered as a mere cosmetic problem and not a medical one as it should be. Multiple medical conditions resulting in significant morbidity and mortality are associated with obesity even a surprisingly low levels of excess body fat. Obesity is now recognized as a powerful independent risk factor for heart disease, as are other known heart disease risk factors like smoking, hypertension (high blood pressure) and high blood cholesterol. The Lancet, a highly respected medical journal has labeled obesity as a "Time Bomb That is Ticking Away"

AN ANALYTICAL STUDY OF THE ENVIRONMENTAL PERSPECTIVE IN AN OCCUPATIONAL SOLDIERING HABITAT

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Armed Forces Medical Services, India

Introduction

Military history has unambiguously established that environmental factors have claimed more lives & limbs of soldiers, than combat itself. The Armed Forces with pre-dominantly outdoor employability underlines the significance of eco-perceptivity and occupational perspective to optimize the soldier's battle worthiness and quality of life. The deleterious effects of depletion of the ozone layer, global warming, pollution and solar radiation, inspired this pioneering study to analyse the environmentally influenced Photodermatoses (PD) in a soldiering habitat.

Materials & Methods

A multi-centric KAP study was conducted as Western Command Research Project through questionnaires and responses received from 330 military personnel deployed in different locations. The analysis of the type, severity, morbidity and duration of PD in military personnel was correlated with influencing factors of the environmental parameters, effectivity of ensembles, clothing, and comfort zone indices in various climatic and geographic conditions.

Results

Amongst the 250 cases of PD, Polymorphic Light Eruption was commonest comprising 66.1%. The age group between 20 – 40 yrs was the highest affected (63.2%). Other ranks (OR) had the highest incidence at 77.6%. Average duration of sun-exposure between 1-4 hrs/day showed highest susceptibility (56%). Exposed areas were involved in 67%. The larger number of PD cases in deserts (69.6%) correlated with the highest mean solar radiation ($6.145 \text{ KWhm}^{-2} \cdot \text{day}^{-1}$) in Rajasthan. Use of combination sunscreens & protective clothing exhibited a beneficial effect in preventing PD.

Conclusion

The 21st Century's, optimally battle worthy soldiering habitat & attire must be in harmony with the changing environment.

PREVENTION OF PARENT TO CHILD TRANSMISSION OF HIV INITIAL EXPERIENCE AND APPRAISAL

Lt Col S K Kathpalia
Armed Forces Medical Services, India

Prevention of mother to child transmission programme was started on 01 Nov 2002 at Armed Forces Medical College and Command Hospital Pune. Later on the name of programme was changed to prevention of parent to child transmission. The programme has a five-pronged approach like primary and secondary prevention by antiretroviral drugs, safer deliveries and appropriate infant feeding practices etc.

From the beginning of the programme to 31 Aug 2005, 9086 antenatal cases were registered, counseled and tested for HIV after consent. The data and observations were collected and analyzed.

Incidence of seroprevalence was detected to be 0.48%. Spouses of 41 HIV positive cases were counseled and only 37 were willing for testing. Of these only 27 cases were positive. Nine cases underwent MTP, the remaining were enrolled for Nevirapine therapy for secondary prevention. 16 HIV positive cases delivered at our hospital, 15 were live births and 1 fresh stillbirth. Of the remaining 14 positive cases, 4 cases did not collect the report, 4 were lost to follow up and 6 are antenatal cases. Only 4 newborn babies could be followed at pediatric OPD. All mothers decided not to breast-feed.

The PPTCT programme has definitely been successful in bringing about awareness and thereby preventing primary infection. Though the programme primarily appears to be concerned with secondary prevention to the newborn baby, the babies could not be followed up.

A CLINICAL STUDY OF DRUG RESISTANT TUBERCULOSIS AMONG IN PATIENTS IN AN ARMED FORCES HOSPITAL

Col (Mrs) Shashi Dangwal,
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Resistance to Anti Tuberculosis Treatment (ATT) drugs is known since the advent of first anti tubercular drug 'Streptomycin'. But lately drug resistance has been on the increase. This study was undertaken to study the type and pattern of drug resistance among Armed Forces.

The study was conducted on patients admitted to Military Hospital (Cardio Thoracic Centre) Pune which is a tertiary referral hospital of Armed Forces. A total of 80 patients with suspected drug resistance admitted to this hospital between Apr 95 to Dec 97 were enrolled in the study. Clinical profile of these patients was recorded. Routine haematological investigations and chest radiography was performed. Sputum microscopic examination after Zeil Neilsen staining for AFB was done. Culture of Mycobacterium Tuberculosis was done on Lowenstein Jensen medium. Subsequently ATT was started and 2nd line ATT drugs were added where required. All patients were followed up for 18 to 24 months.

Out of 80 patients, 58 had proven resistance to one or more drugs. Out of this, Multi Drug Resistance (Resistance to INH & Rifampicin) was proved in 18 patients. At the end of the treatment, 62 patients were declared cured, 10 patients developed chronic tuberculosis, 3 were lost to follow up and 5 succumbed to their illness.

Prevalence of Drug Resistant Tuberculosis in Armed Forces is not very high. With proper treatment the outcome is good.

TRAUMA CARE SOLUTIONS FOR THE THIRD WORLD

Lt Col Shishir Kumar
Armed Forces Medical Services, India

Introduction

Trauma patients in the West, are managed in specialized 'Trauma Centers' by a team trained to carry out the initial management and added super specialists to attend to organ system injuries. A well developed evacuation system consisting of ambulances, helicopters and fixed wing aircrafts are required to take the patients to the trauma centers within minutes. The combination of a well developed evacuation system and the functioning of the specialized trauma centers greatly elevate the cost of trauma care, a cost which cannot be afforded by a country like India which has a very large regular Armed Forces, not so well developed evacuation system, few super specialists and meager resources. To circumvent this problem the concept of 'Holistic Trauma Care' for a third world Army is proposed. The basic aim of this system is to strengthen the zonal hospitals where the patient can reach fast and man them with surgeons who are capable of managing all aspects of trauma.

Materials And Methods

169 patients of polytrauma were operated over a period of 30 months by a team consisting of a 'Trauma Surgeon' trained in 'Holistic Trauma Care' and one general surgeon in a 600 bedded zonal hospital of the Indian Army. No patient of polytrauma was transferred to any higher center.

Results

There were 36 patients of head injury, 83 of limb injuries, 20 of abdominal injuries, 18 of spinal injuries and 17 of maxillofacial injuries. Thirteen patients died (7.69%) and twelve patients developed major complications (7.1%).

Conclusion

The concept of 'Holistic Trauma Care' decreases the evacuation time of the patient saves costs with results comparable to that of a 'Level I' Trauma Centre.

SURGICAL MANAGEMENT OF MAXILLOFACIAL DEFORMITIES

Lt Col S K Roy Chowdhury, Col S Karkun
Armed Forces Dental Services, India

Studies of maxillofacial deformities worldwide has shown trauma to be one of the primary causes of deformity. Other causes include congenital defects (clefts of the orofacial region, hemifacial microsomia, hypoplastic jaw bones etc), TMJ ankylosis, operated cases of maxillofacial tumors (both benign and malignant) etc.

Over the period from July 1997 to Oct 2005, more than 2000 individuals have been treated for various types of maxillofacial deformities. The cases treated were in three centres where the author was stationed for performance of duty. Standard resuscitation protocols were followed for cases of trauma along with prioritisation of treatment. Injury distribution in the Maxillofacial region covered all facial bones, either in isolation or in various combinations along with mild to severe facial soft tissue lacerations. Treating these cases involved ORIF, primary and secondary repair of soft tissues along with subsequent physiotherapy and prosthetic rehabilitation. Causes of facial deformities other than trauma were treated using bone grafts, orthognathic surgery and distraction osteogenesis in isolation or in combination.

In majority of the cases of trauma, the results achieved were quite satisfactory, both functionally and esthetically. In cases of facial deformities due to causes other than trauma, establishing satisfactory facial features- frontal and profile, were achieved, in general, in all cases with functional harmonious occlusion after post surgical orthodontics, where necessary. Extensive rehabilitatory process added to the surgical results and contributed immensely to the return of optimal esthetics and function for the individuals.

Timely management with the utilisation of the appropriate recommended techniques of surgery in combination of adjunctive prosthodontic and orthodontic therapy plays an important role in correcting facial deformities and achieving esthetic and functional harmony of the maxillofacial region.

CLOSED INTERLOCKED INTRAMEDULLARY NAILING OF TIBIAL FRACTURES SUSTAINED IN NON ENEMY ACTION

Lt Col S Suresh Kumar, VSM
Armed Forces Medical Services, India

Serving soldiers on active duty are constantly exposed to high velocity trauma even in non combat situations like training, vehicular movement, service in difficult terrain etc. Fractures of the lower limb due to non enemy action are particularly common in the service environment. The emphasis on treatment is early and uneventful return to the premorbid activity level. Closed interlocked nailing is one treatment modality which could favourably influence the outcome of such cases.

36 cases of tibial fractures sustained due to non enemy action were managed by closed interlocked intramedullary nailing at a 30 bed orthopaedic centre of large peripheral zonal hospital of the armed forces. 32 cases were closed and 4 cases were open. Comminuted patterns of fracture were more common in the series and constituted 42% of tibial fractures. The average interval between fracture and surgery was 5 days. Static interlocking was done in 34 cases and dynamic interlocking was done in 2 cases. The average duration to full weight bearing was 8.2 weeks. Routine dynamisation was not done in any of the cases.

Excellent to good results were achieved in 34 (95% approx) cases. Fair result was achieved in the remaining 2 cases. There was no poor result. The most common complication encountered was anterior knee pain in almost 20 % of the series.

Closed intramedullary nailing with interlocking is recommended as the method of choice for treatment of diaphyseal tibial fractures at base hospitals with ortho centres.

MANAGEMENT OF RESIDUAL BONY DEFORMITIES IN CRANIOFACIAL REGION

Lt Col Suresh Menon
Armed Forces Dental Services, India

Residual deformities of the craniofacial region are an entity necessitating restoration of the original architecture in order to avoid functional and aesthetic compromises. These are common in war injuries and road traffic accidents requiring comprehensive management.

This presentation highlights the common residual deformities of the craniofacial region underlying the treatment options available in the repertoire of today's craniomaxillofacial surgeon.

Good functional and aesthetic results were achieved using an array of reconstructive options ranging from autogenous bone grafts to alloplastic biomaterials like titanium & polyethylene.

Residual deformities of the craniofacial region require careful assessment and adequate soft tissue coverage to ensure a good restoration of the bony defect.

AN ANALYSIS OF ARRHYTHMIAS AND THEIR MANAGEMENT YOUNG SOLDIERS AT TWO REFERRAL CENTRES

Lt Col Viney Jetley, Lt Col SK Malani, Lt Col S Garg, Dr S Mohan, Col Nikhil Kumar, Lt Col Anil Dhal, SM, Lt Col SK Datta, Lt Col P Bharadwaj, Lt Col S Singh, Lt Col S Sofat, Brig Charanjit Singh, VSM,
Armed Forces Medical Services, India

Tachyarrhythmias in structurally normal hearts are an important cause of morbidity in Armed Forces Personnel. Radio frequency as part of clinical cardiac electro physiology has revolutionized a subspecialty of cardiology practice within the last two decades. The administration of drugs has been surpassed as the primary form of therapy for patients with specific types of symptomatic arrhythmias by the percutaneous application of RF energy targeting intracardiac structures responsible for the initiation or the maintenance of an arrhythmia.

257 cases were taken up for invasive electrophysiology and Radiofrequency Ablation at MH CTC Pune and Army Hospital R&R.

220 cases were of Narrow QRS tachycardia and Preexcitation syndrome. These included AVNRT, AVRT, Mahaim Fiber Mediated Tachycardia, Atrial Tachycardia and Typical Atrial Flutter. 37 individuals had Ventricular Tachycardia (Right Ventricular Outflow Tachycardia, Fascicular VT and Bundle branch VT. 7 cases had dual Tachycardia (AVNRT and Concealed Accessory Pathways). 210 out of 220 cases of Narrow QRS Tachycardia were successfully ablated while 28 out of 37 cases of ventricular Tachycardia could be ablated. There was no mortality. Two cases developed Complete Heart Block.

Cardiac arrhythmias are an important cause of morbidity in young armed forces personnel. Radiofrequency Ablation may cure long standing chronic disease in several types of arrhythmias in just seconds.

TRUCKERS ON THE HIV HIGHWAYS

Lt Col V K Agrawal
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Abstract

Background

India has one of the largest road networks in the world and an estimated 5 million long distance lorry drivers. These men are away from their families for long durations, and in the unhealthy environment along the highways they become easy prey for commercial sex workers. **Methods:** This study is based on information collected from a sample survey of long-distance truck drivers and their assistants by pre-coded questionnaire administered to each respondent in a face-to-face interview.

Result

In our study 73.3 % truckers were in 21-40 age group. 77 % truckers were married. 95.1 % truckers have heard name of HIV/AIDS. The truckers generally knew that HIV could be transmitted by infected needles /blood transfusion (90.8%) or from sexual route (88.0 %), or from mother to child during pregnancy (65.8 %). However 15.1 % of the men thought mosquito bites could transmit HIV and 5.3 % believed that one could get infected by sharing meals. Almost one-third (26.1%) reported intercourse with at least one 'commercial' partner (partner with whom sex was exchanged for money) in last 3 months. Though 75.0 % truckers knew that HIV can be prevented by use of condom, only 70.3 % (Out

of sexual promiscuous) used a condom while having sexual intercourse with a commercial partner.

Conclusion

The study highlights high-risk behavior of long distance truck drivers inspite of having knowledge regarding route of transmission and prevention of HIV. The HIV/AIDS prevention projects in truck drivers should focus on behaviour change and enhancing condom use both with commercial and casual partners.

RESURFACING COMPLEX POST-TRAUMATIC DEFECTS ON THE ANKLE AND FOOT – OUR EXPERIENCE

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Introduction

One of the most challenging areas in the field of plastic surgery is the management of soft tissue defects around the ankle and foot. The dependent position of the leg with venous stasis and ulceration, the weight bearing part of the sole which needs a well padded and sensate cover, and the subcutaneous location of the tibia with a poor vascular environment, all contribute to poor healing.

Forty-five patients with post-traumatic soft tissue defects around the ankle and foot were managed in a tertiary care Reconstructive Surgery Centre. Every patient was assessed in detail and the most suitable cover was provided.

Nearly one third of the patients were over 50 years with a predominance of males. Compound fracture due to road traffic accident was the commonest etiology and the foot was affected more often than the ankle. The distally based superficial sural artery flap was used most commonly, followed by the lateral calcaneal artery flap and the medial planter artery flap. A few patients had minor complications like marginal superficial flap necrosis and donor site skin graft loss.

Early and appropriate cover for complex soft tissue defects around the ankle and foot is of the utmost importance so as to facilitate early ambulation. It is essential to asses the defect after adequate debridement and plan the ideal cover. The requirements for reconstruction are a soft tissue cover which provides an optimal padding, fills up a large cavity with a durable and sensate skin.

EPIDEMIC OF PNEUMOCOCCAL PNEUMONIA IN TWO REGIMENTAL CENTRES

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From 01 Jan 2004 onwards there was a rise in the number of pneumonia cases in two regimental training centres. A total of 316 cases occurred from 01 Jan 2004 till 16 Jun 2004. There was no severity among any case. Detailed epidemiological investigation revealed that there was gross overcrowding in both the regimental centres. This was due to unusually higher intake of recruits. X – Ray chest revealed homogenous consolidation of one or more lobes or segments typical of pneumonia. Out of the 316 cases, 233

(73.74 %) showed Diplococci / Pneumococci in their sputum culture, 28 (8.86 %) showed mixed growth with predominant growth of pneumococcus, 44 (13.92 %) showed commensals growth and remaining 3 (00.95 %) showed no growth. In 8 (02.53 %) case only saliva could

be collected and therefore sputum culture could not be done. The epidemic was controlled by segregation of the affected squads and by reducing overcrowding. All the cases responded to penicillin group of antibiotics, which was also the result of the antibiotic sensitivity test carried out in the laboratory of the local MH.

TUBERCULOSIS REVISITED

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60% of Pulmonary TB are presently Multi Drug Resistant TB. Normally treatment with four drugs is started and if sputum is positive after months of starting ATT, second line drugs have to be added. The treatment has to be continued for 2-3 years.

Extra pulmonary TB is becoming more common and HIV Patients are presenting more frequently with extra pulmonary TB and once TB is acquired in HIV patients the course of disease becomes fulminate.

TB of genitals is commonly missed in females. Neck glands are missed in males. Other silent TB sites are of liver, spleen, rectum, duodenum pancreas.

Chest X-ray which was once gold standard for diagnosing TB, misses lesions such as Endo bronchial and hilar TB, TB glands of superior mediastinum, and early pleural TB.

CT scan of chest should be advised when a patient presents with PUO with loss of weight, has cough and may/may not have history of contact.

Biopsy specimen should be subjected to following tests for accurate diagnosis:-

- (i) Histopathology.
- (ii) Immunohistochemistry.
- (iii) Smear and culture for AFB
- (iv) Smear and culture for fungus.
- (v) Cytology smear for malignant cells.
- (vi) Molecular studies like, Ag, PCR, DNA and other immunological markers.

Management of tuberculosis patients have to be done very cautiously, before TB destroys the whole world.

MANAGEMENT OF OCULAR INJURIES IN CASES OF EXTENSIVE ANTERIOR SEGMENT TRAUMA SUSTAINED IN COUNTER INSURGENCY OPERATIONS

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To evaluate the extent of trauma induced structural damage, their adverse impact on surgical procedure innovations as well as analysis of delayed post operative complications sustained in CI Ops, their management by anterior segment reconstruction and final functional outcome in a tertiary Indian Military Hospital.

45 cases of ocular injuries sustained in CI Ops including traumatic cataract along with associated multiple anterior segment tissue damage were managed by a number of variable surgical procedures like reconstruction of anterior segment along with IOL implantation and subsequent procedures if required. Further evaluation was based on trauma induced preoperative structural derangement, intra operative constraints and observations as well as critical analysis of pattern of post operative complications, their management and impact on final visual outcome. The management profile of post operative complications included YAG Laser Iridotomy, Laser sweeping of uveal pigments from IOL surface, capsulotomy and reconstruction of anterior segment along with penetrating keratoplasty in certain cases.

Partial pupillary atony, stromal atrophy of iris, multiple anterior and posterior synechiae, holes and tears in iris and sclero-corneal injuries were some of significant soft tissue injuries present along with cataract. Post IOL implantation retro IOL membrane formation, IOL decentration, posterior capsular opacification, secondary glaucoma and corneal decompensation with bullous keratopathy were noted post operative complications.

Adequate primary management with relevant microsurgery, meticulous intraoperative tissue respect to injured tissues, constant post operative follow-up are crucial and ultimate factors in salvaging the severely damaged eyes and restoring useful sight in them.

PRE-TREATED PYRETHROID PATCHES : AN OPERATIONALLY FEASIBLE METHOD TO REDUCE MAN- MOSQUITO CONTACT UNDER FAST EVOLVING MILITARY CONDITIONS IN HYPER-ENDEMIC AREAS

Lt Col Anuj Bhatnagar, Col Rajvir Bhalwar, Col VK Mehta
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Abstract

Treatment of mosquito nets with synthetic pyrethroids is well proven for its efficacy in enhancing the protection, both for the individual as well as for the community. However, the difficulty with insecticide treated mosquito nets is that, in certain military operational scenarios, it may not be practical for the personnel to carry mosquito nets with them.. Various alternatives therefore need to be assessed to assist the troops during these situations. In quickly evolving and mobile military operations, where troops are on the move for most of the time, availability of pre-treated 'patches of cloth' or 'bands', which can be applied over the uniform at strategic sites, can be an operationally feasible alternative.

A double blind Randomised Controlled Trial was undertaken among troops deployed in counter-insurgency operations in the North-East to assess the efficacy of synthetic pyrethroid pre-treated patches in reducing man-mosquito contact, as compared to conventional repellents. The study indicated that pre-treated patches, when affixed over the uniform, provided significantly higher protection from mosquito bites, when used in addition to the conventional repellents.

The present study has highlighted the need to evolve newer and innovative methods of protection against mosquito bites, since our troops continue to suffer from mosquito-borne diseases. The study recommends that synthetic pyrethroid treated patches be made available to all such troops who are operating in highly malarious areas and under fast evolving military situations.

THE TSUNAMI TRAGEDY: AN RETROSPECTIVE ANALYSIS

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On 26 Dec 04, a massive earthquake in the oceanic coast of Indonesia off Sumatra resulted in massive land displacement under sea leading to giant tsunami's devastating the various costal areas of South-East Asia within a short period of time. A multidisciplinary team comprising of six medical officers and twelve medical assistants were assembled at short notice on 26 Dec 2004. The team reached Colombo by ship from where it was airlifted to Batticaloa to provide medical relief. The team over next 20 days covered approximately 250 Sq Km with a death toll of 2,254 and around 1000 persons still reported missing. Roughly 95,000 families were displaced with over 2,00,000 people housed in difficult living conditions in 94 camps altogether (Internally Displaced Person or IDP Camps). An estimated 40,000 houses were completely damaged. The team, in coordination with civil administration adopted the complete IDP camps of Batticaloa district by providing medical support and undertaking various health promotion activities. The team worked to prevent breakdown of any epidemic. The work put in by the team was fruitful as on retrospective analysis of activities conducted, the effective health management provided by the team bore tangible result, as there were no epidemics of notifiable/communicable diseases and also there was also a progressive decline in the number of persons seeking medical help. We plan to discuss the efforts put in by the team, the adversities faced and recommendations for future planning and execution in the event of major disaster.

HNMR SPECTROSCOPIC ANALYSIS OF HUMAN SALIVA

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Col P K Biswas, Lt Col H S Darekar,
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Periodontal diseases are multifactorial in nature; it involves a complex interplay between genetic, environmental & as yet unknown factors which results in tooth mortality. Traditional diagnostic methods give us information about the past events of the disease, not the active state of the lesion; nor are they predictors of future attachment loss. This prevents the clinician from effectively designing a customized treatment plan for his patients.

Exploring the metabolic status of bio-fluids in order to identify disease markers is an established methodology; one of which is high-resolution Nuclear Magnetic Resonance [NMR] spectroscopy [3,6]. It basically involves the interaction between electromagnetic radiation & matter. This technique is highly suited for the multi-component analysis of human saliva for pre-symptomatic diagnosis. It possesses many advantages over alternative analytical methods. To the best of our knowledge this study is the first of its kind in our country.

In our country, a huge proportion of the populace are affected by periodontal diseases, most of whom cannot afford basic health care. This diagnostic modality offers a highly cost & labour effective method to screen large populations thus aiding in & acting as an advanced warning system against future initiation & progression of periodontal diseases.

However there were certain disadvantages of the present study which are to be highlighted. Firstly the sample size was small, secondly higher NMR frequencies would have helped us to identify larger no of chemical species. Two dimensional Correlation Spectroscopy (COSY) would have helped us in further molecular characterization. Therefore larger multicentric longitudinal studies should be

undertaken before any definitive conclusion is reached. As such it is proposed that, further carefully designed, well documented & controlled studies are necessary to determine to what extent NMR Spectroscopy can help us in diagnosing & treating periodontal diseases.

MILITARY PERSPECTIVES OF DENGUE VIRUS RESEARCH

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Dengue is reemerging as one of the most important public health problem with an estimated 50 million cases occurring per annum. Dengue is now endemic in most parts of India. The military perspectives of Dengue virus research include improved surveillance with laboratory confirmation of suspected cases and tracking down the source of the infection in order to discriminate between natural epidemics and the intentional use for bioterrorism. In this context, we have developed a number of immunological and molecular detection techniques for effective surveillance of dengue virus. A field based Dipstick ELISA kit (DENSTICK) has been developed as a rapid screening for detection of IgM and IgG antibodies. The multicentric evaluation of this kit revealed more than 85% concordance with commercial PanBio ICT kit. Molecular techniques *viz*, one step RT-PCR, Nested PCR, Real-Time PCR and Multiplex PCR have been developed for rapid detection and serotyping of dengue viruses. A novel isothermal real time quantitative gene amplification technique *i.e.*, RT-LAMP has also been developed for rapid detection and serotyping. This assay is found to be more sensitive than RT-PCR and results can be obtained within 30 minutes without requiring thermal cycler. Monitoring of gene amplification can also be accomplished through color reaction employing SYBR Green I fluorescent dye. Molecular epidemiology study based on the sequence analysis of various genes of circulating strains was carried out in order to have the information on the genetic relatedness of circulating genotypes which can be used as a data bank to track down the source of bioterrorism.

CHALLENGES AND ASPIRATIONS: A MODULE OF PSYCHOLOGICAL INTERVENTION AFTER AMPUTATION IN ARMED FORCES PERSONNEL.

**Kalpana Srivastava, Col D Saldanha, Surg Cdr AA Pawar ,
Surg Cdr VSSR Ryali, Lt Col RC Das
Armed Forces Medical Services, India**

Psychological aspects of adjustment to amputation are varied and not addressed in the present treatment regime. Amputation is carried out in cases of mine blast injuries and frostbite apart from other accidents and crush injuries in soldiers. However there is no research evidence available of psychological intervention and outcome in Indian scenario.

Sample for the study comprised of 173 consecutive patients with limb amputations. The patients were randomly assigned to psychotherapeutic intervention module (PIM, study group) (n=90) and treatment as usual group (TAU, control group) (n=83). Patients with psychotic disorder were excluded from the study. Carroll Rating Scale for Depression (CRSD), State-Trait Anxiety Inventory (STAI),

Amputees body image scale (ABIS), Impact of event scale (IES) along with specially designed information schedule were administered individually. Structured psychotherapeutic module was developed for the intervention. Patients in PIM group were given six therapy sessions, addressing the specific areas of concern. All patients were evaluated on the same tools after two months of therapy. Z test was used for analyzing scores of study group and control group. To evaluate within group performance paired 't' test was applied.

Analysis showed that after treatment a significant reduction in scores was noted on CRSD, STAI, ABIS and IES in the PIM group ($p < .05$). On the TAU group a significant reduction was seen only in the ABIS.

The Psychological intervention module proposed by authors was efficacious in alleviating the distress. Findings revealed statistically significant reduction in scores of psychological distress, depression, anxiety and impact of event scale and thus was vastly superior to the conventional method of management of amputees.

RESPIRATORY PROTECTION IN NBC ENVIRONMENT

NS Kumar & ASK Prasad

Defence Bioengineering and Electro medical Laboratory, India

Respiratory protection against Nuclear, Chemical and Biological NBC warfare agents is an important aspect for Armed Forces. DEBEL has designed and developed NBC Respiratory mask to give protection to respiratory tract and face against chemical warfare agents, radio active dust and biological threats.

Work was carried out to select/formulate the suitable materials for all the components of the mask. There are 53 components and are made up of rubber, plastic and metallic components. The most important component is face piece which holds all the subassemblies like inner mask, exhalation valve system, drinking water facility, connector system, and visor. The face piece shall have required flexibility and shall have at least 24 hours break through time (BTT). BTT is a measure of penetration resistance against chemical warfare (CW) agents. Attempts were made with various rubber formulation like neoprene, Natural rubber, EPDM, butyl rubber and Bromobutyl rubber and the binary blends. In addition to the required physico-chemical properties like tensile strength, % elongation, tear strength, hardness, BTT, ability to withstand decontamination and tropical environmental conditions, and easy process ability, also considered for the selection of suitable rubber formulation for face piece. Bromobutyl rubber was formulated which meets the entire requirement. In this way depend on the specific requirement all the rubber and plastic components were formulated/selected.

The rubber, plastic and metallic components were assembled and the prototype masks were tested for functional tests as per the requirement. The important tests carried out were breathing resistance, man test, leak test, BTT test for visor, which includes impact resistance and % of transmission, test for threads using 'Go' and 'No Go' gauge and exhalation valve leakage test.

MOLECULAR TOOLS IN TRACKING BIOTERRORISM

P. K. Dash, M. M. Parida and P. V. L. Rao

Division of Virology, Defence Research and Development Establishment, INDIA.

The development of a technology with a rapid and sensitive detection capability and an increased throughput has become crucial for responding to a greater number of more sophisticated threats posed by biological warfare agents. In addition, the ability to respond adequately to a biological threat requires a detailed understanding of the agent to determine the appropriate response. Most current identification methods require time-consuming culturing, or are limited to known and select organisms such as various antigen/antibody methods. The recent advances in molecular biology techniques in the field of genomics and proteomics greatly facilitate the rapid identification and tracking down the source of origin. Molecular epidemiology study based on the sequence analysis of various genes of circulating strains enabled to gather information on the genetic relatedness of circulating genotypes which can be used as a data bank to track down the source of bioterrorism. Therefore creation of genome data bank for all BW agents and circulating organisms in the Country causing natural epidemics is imperative for future reference and mapping. This has greater significance in Indian scenario where epidemics are being reported round the year in different parts of the country to distinguish between natural epidemics Vs BW attack as well as to pinpoint the source and origin of the organism. Besides, this will also help to update the primer data bank for rapid detection and also strategies for vaccine designing.

RECOMBINANT VACCINES AGAINST BIOTHRREAT AGENTS: IMPLICATIONS FOR BIODEFENCE

Priyabrata Pattnaik and P.V. Lakshmana Rao

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The potential use of biological agents such as viruses, bacteria or toxins as weapons of mass destruction has fuelled significant national and international research and development in novel prophylactic or therapeutic counter measures, e.g. biodefence vaccines. Currently, only a handful of vaccines covering a small proportion of potential biowarfare agents are available for human use (e.g. anthrax and small pox) and these suffer from poor safety profiles. Therefore, next-generation biodefence-related vaccines and therapies with improved safety and efficacy to introduce more rapid, more potent and broader protection are needed. In this context, we have undertaken a project to study feasibility of development of recombinant tetra-valent receptor-blocking sub-unit vaccine for dengue. Invasion of dengue virus to target cells occurs by receptor mediated endocytosis. Envelope protein (domain III) of dengue virus interacts with cell surface heparan sulphate to initiate virus attachment and penetration. We assume that antibody raised against domain III of envelope protein may interfere in attachment of dengue virus to target cells, thereby offering protection. This concept will be tested in the above project. The outcome of this effort will offer confidence in developing improved recombinant vaccine against Kyasanur Forest disease (KFD), the only Indian hemorrhagic virus listed as potential bioweapon agent. Our molecular modeling studies indicate that recombinant envelope protein of KFD virus could be explored for development of safer and improved vaccine than the existing formalin inactivated cell culture KFD vaccine. Other than developing new vaccines, newer technologies are thought to be applied to existing vaccines or adjuvants to increase their potency. Based on the available information, we strongly believe that a recombinant sub-unit vaccine can be produced economically, will have better protective efficacy and safe to use. From an Indian perspective, it is important to develop vaccines selectively for military use, develop competence for pre-clinical vaccine challenge study and clinical trial for vaccine and action plan for wide coverage of vaccination and stock piling.

EXERTIONAL HEAT INJURY

Surg Cdr Singh KJ Singh
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It is important to recognize exertional heat injury in contrast to classical heat stroke, as the former is common in military recruits and sportsmen.

Individual brought to the hospital with altered sensorium following exertional activity were included in the study. Those with evidence of co-existing illness including URTI were excluded. 30 cases were thus included. They were treated with cooling with tepid water and supportive measures.

36 % of cases had temperature less than 99 Degrees F. Only 24% cases had temperature in excess of 101 Degrees F. Only 01 case had temperature in excess of 105 Degrees F. Transient hypotension was recorded in 13.2% cases. Elevated BUN was seen in 26% and elevated hepatic transaminases in 33%. One case had fatal outcome. Remaining cases made complete recovery. Duration of delirium was 30 mins 48hrs (mean duration being 13.2hrs)

In exertional heat injury CNS alterations may occur even in absence of pyrexia/hyper pyrexia. Early evacuation, aggressive cooling and supportive measures result in good outcome.

THE PERIODONTAL ASPECTS OF SUCCESSFUL IMPLANT THERAPY

Sqn Ldr Shreehari
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Dentistry has entered a new era of dental care and oral rehabilitation with the introduction of implants. Dental Implants as a treatment modality have come to stay in our profession as they increase the treatment possibilities and improve the functional results of the treatment and thus provide the most effective way to rehabilitate a dental cripple thereby improving his / her quality of life. Successful implant therapy, however is not a cakewalk from day one of the treatment. Despite long term predictability of osseointegrated implants biologic, biomechanical and esthetic complication can occur. Pathologic changes of the peri-implant tissues can be placed in the general category of peri-implant diseases. Peri-implant tissue breakdown can be the result of microbial action as well as of biomechanical and occlusal overload. Studies have revealed that plaque associated lesions become more pronounced and occupy greater volume of connective tissue around implants. A failing implant can soon become a failed implant if periodontal consultation and intervention is not attempted. Peri implant therapy includes establishment of occlusal equilibrium, anti infective therapy and various surgical procedures consisting of both resective and regenerative techniques and the post operative care and maintenance of dental implants.

HELICOPTER CREW CONDITIONING PROGRAMME AT AN AIR FORCE STATION

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Abstract

LBA in helicopter aircrew is a well documented problem and is a significant cause of loss of flying hours both in military as well as civilian aviation. The problem of LBA in helicopter pilots has been studied extensively. Factors causing a higher incidence of LBA in helicopter pilots are poor posture, related to seat design and during active flying, bending forward with axial rotation of spine to handle the controls, dynamic loading due to control resistance and low frequency vibrations. The problem of LBA is significant in the helicopter. An attempt to reduce the discal injuries by strengthening the spinar muscle could be a viable and acceptable occupation in reducing the incidence of LBA in the long run.

OTOENDOSCOPY IN OTITIC BAROTRAUMAS: A STUDY OF CURRENT APPLICATIONS

Surg Capt Emmanuel James, Surg Capt B Sudarsan, Surg Cdr Sanjeev Badhwar
Armed Forces Medical Services, India

Otitic barotraumas is a common occurrence in sailors who undertake diving. It is frequent among the uninitiated and those who undertake subsurface (Hyper baric) activities in the presence of existing Sino-nasal dysfunction which may eventually lead to middle ear/inner ear barotraumas. This study highlights the versatility of the otoendoscope and otoendoscopic surgery in the evaluation and treatment of these and related middle ear/inner ear disorders.

Naval divers were used as the main subjects of study. However non-professionals suffering from barotraumas were also included in the study group. Objective evaluation and documentation were performed using an audio logical test battery, video otoscopic and otoendoscopic examination. Otoendoscopic surgery was performed where indicated and the results collated and compared using the earlier evaluation criteria and methodology.

It was observed that otoendoscopic evaluation provided a comprehensive insight into hitherto hidden areas of the middle ear and certain etiological factors in otitic barotraumas. Otoendoscopic surgery proved to be quicker, safer and effective method of treatment of these disorders reducing patient morbidity and hospital stay, and in the long term preservation of hearing.

Otoendoscopy and endoscopic surgery of the middle ear has proved to be an effective alternative/ addition to the ENT surgeons armamentarium in hearing conservation surgery.

DETERMINATION OF RELATIONSHIP BETWEEN DESIGN EYE POINT AND NEUTRAL SEAT REFERENCE POINT IN A FIGHTER AIRCRAFT

Surg Capt LJ Pinto, Wg Cdr N Taneja
Armed Forces Medical Services, India

Introduction

The Naval variant of the Indian Light Combat Aircraft (LCA) required the pilot to have Over the Nose Vision (ONV) increased from the original 15° to 21° degrees. This was due to the lower approach speeds and thus high angle of attack. Computer simulation using anthropometric mannequins in Auto CAD® indicated an alteration in Seat Back Angle (SBA) along with an increase in height of Neutral Seat Reference Point (NSRP) would be adequate to attain the required ONV. However exact relation between the Design Eye Point (DEP) and NSRP was not known for this SBA and thus had to be determined. Two methods of determining this relationship were used, one using photography and the other direct measurements of the eye from two known points.

Materials and Methods

The front cockpit of the LCA trainer mock up was used, as its structure forward of the front cockpit was similar in construction to LCA (Navy). A photographic method of location as well as a method of locating DEP by measurement of the eye from two known points was used. Aircrew close to 50th percentile sitting height, attired with full flying clothing, were used. With the harness locked and tight and the subject in normal flying posture, photograph was taken and measurements made of the eye to two known points on the headrest.

Results

Results were analysed statistically as well as by plotting the center of the best fit ellipse. Using photography and the statistical average, absolute values of x and z was 3879.14 and 835.29. The centre of the best fit ellipse was at x 3870.82 and z 835.47. When using measurements the average x and z were 3886.84 and 833.03 and the centre of best fit was at 3876.17 and 828.99 respectively. The absolute Mean DEP coordinates were subtracted from NSRP coordinates (x 3880.24 z 77.3) to arrive at their relationship which was found to be x 105.36 and z 756.11

Conclusion

Mil Specs 1333B specify the forward (x) displacement of DEP from NSRP for seat back angles from 10° to 15°, in ½ degree increments. The vertical displacement (z) is kept constant at 31" (787.4 mm). Seat back angles more than this require that the relationship between these two points to be defined as both x and z would vary. Moreover with different populations having differing mean eye level height the value of z would also change. Both photography as well as measurement from a known point are relatively easy to perform and accurate methods of determining DEP NSRP relationship.

MOBILE ENDOSCOPIC SURGERY UNIT- A NOVEL CONCEPT FOR THE ARMED FORCES

Surg Cdr A Kapur, Surg Capt Sushil Kumar
Armed Forces Medical Services, India

The paper explains the concept and logistics of an idea new to the Armed Forces- that of a mobile endoscopic surgery unit. This unit comprising of a gynecologist and a surgeon trained in endoscopic surgery would move with bare minimum hand instruments to the various mid and small level service hospitals and conduct advanced laparoscopic surgery with the intention of benefiting the patients especially families who are unable to reach a larger hospital due to various constraints. An additional advantage would be training the younger gynecologists and surgeons posted in these hospitals. This concept would also ensure optimal utilization of resources, good maintenance of equipment and wider exposure to personnel under training to this unit.

A STUDY OF OCCUPATIONAL STRESS AND LIFE SATISFACTION AMONG INDIAN NAVY PERSONNEL

Surg Capt AA Pawar, Ms J Rathod, Col D Saldanha, Surg Cdr VSSR Ryali,
Lt Col RC Das, Ms K Srivastava
Armed Forces Medical Services, India

Increased stress levels have been reported in the community by the lay press. Some studies abroad have reported increased stress in routine tasks among servicemen. However to date no study has been reported among Indian Naval Sailors.

Occupational Stress and Life satisfaction were measured in 413 Naval personnel serving a float and ashore in a naval station. The personnel were serving on board ship, shore and submarine. Stress levels were evaluated using a comprehensive proforma, and scales standardised on Indian population.

The study revealed that that Naval personnel serving on board sub marine and ship had lower levels of occupational stress compared to those serving on shore establishments. Occupational stress scores were higher among junior sailors (36.7%) compared to officers and senior sailors (20%). Life satisfaction scores were also low in junior sailors .

Greater occupational stress was linked to lower life satisfaction.

The findings of high occupational stress in junior sailors need to be investigated further with a larger sample.

VIRTUAL SCOPY (VS)

Surg Cdr IK Indrajit,
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Virtual scopy is a high end-processing tool that enables screening of body cavities and hollow viscera with unique internal perspective that stimulates fiber optic endoscopy. It combines volumetric acquisition of imaging data with computer graphics to simulate views provided by a fiber optic endoscopes.

VS is a valuable modality increasingly used for evaluating a wide variety of lesions and regions. It consists of four essential elements: a) patients preparation (b) data acquisition (c) data rendering and (d) interpretation with native axial slices. Common application of VS have been principally in three areas (a) Virtual Colonoscopy; (b) Virtual Bronchoscopy; (c) Virtual Gastrosocopy. One important fact remains that VS is not truly limited by anatomic boundaries but relies on natural/generated image contrast for visualization.

VS is a form of advanced visualization technique that uses axial cross sections slices as source to display body cavities and hollow viscera with unique internal perspective. It displays the data in new ways that more closely simulate natural, 3D scenes creating additional visual information about the patient. The advent of Multidetector CT has significantly enhanced the technique of Virtual Scopy, due to its better z-axis resolution, faster data acquisition and improved 3D image quality.

IMAGING OF SINONASAL INFLAMMATORY DISEASE IN ARMED FORCES PERSONNEL

Surg Cdr PC Hande, Surg Capt J D'Souza, Surg Capt E James
Armed Forces Medical Services, India

Abstract

Inflammatory diseases of the sino – nasal system is a common ailment in the Armed Forces. Multi – detector CT (MDCT) imaging is ideal to study the anatomy of the paranasal sinuses and the adjacent structures and is definitely the imaging modality of choice in evaluation of inflammatory disease in the era of functional endoscopic sinus surgery.

HYPERBARIC OXYGEN THERAPY AND MYCOBACTERIUM LEPRAE INFECTION

Surg Cdr PLK Desylva
Armed Forces Medical Services, India

Sixty-four cases of leprosy including fourteen cases of lepra reaction were treated with hyperbaric oxygen therapy (HBO2T) in addition to conventional therapy. Good response to HBO2T was observed in paucibacillary leprosy cases that showed appreciable decrease in erythema, skin infiltration and nerve thickening. The inflammatory cells seen in histopathology sections also decreased after HBO2T. There was appreciable recovery of superficial sensation observed after HBO2T. This response was marginally less in multibacillary cases in this study. Nine cases of type I lepra reaction and five cases

of type II lepra reaction were treated with HBO2T. There was moderate to marked decrease in erythema as well as flattening of lesions in most cases of type I lepra cases. There was decrease in nerve thickening in all cases treated with HBO2T. One case of lepra reaction type II (ENL) showed improvement after HBO2T but relapsed on stopping HBO2T.

Only one case had claustrophobia, but was able to complete the entire schedule of treatment with the help of anxiolytics.

HYPERBARIC OXYGEN THERAPY IN IRVINE-GASS SYNDROME

Surg Cdr Tarun Choudhary
Armed Forces Medical Services, India

Hyperbaric Oxygen Therapy (HBOT) is finding increasing use in various medical disorders. The practice of Ophthalmology also involves the use of HBOT for treating various conditions. .

This presentation aims at presenting the work currently going on in the field of Hyperbaric Ophthalmology.

The use of HBOT for treating Post-Cataract Surgery Cystoid Macular Oedema (Irvine Gass Syndrome) was studied in a prospective randomized controlled study in a tertiary care Indian Armed Forces Hospital. 24 consenting patients who had undergone Conventional Cataract Surgery complicated by a posterior capsular rent, vitreous loss and persistent Cystoid Macular Oedema(CME) six months post surgery were included in the study. They were randomly divided into two groups of 12 eyes each. Group A was exposed to hyperbaric oxygen at 2 ATA for two hours a day for three weeks in addition to conventional medical therapy for CME. Patients in group B received only conventional medical therapy. The resolution of CME angioscopically and the visual improvement was recorded over a period of three months.

At one month after therapy, there was a statistically significant improvement in the visual recovery of the patients exposed to HBOT vis-à-vis the group of patients treated with conventional therapy. This difference lost its statistical significance at three month review, though the improvement in the HBOT group was still better than the conventional therapy group.

HBOT offers a noninvasive and convenient adjunctive therapy for treating postoperative cystoid macular oedema (Irvine Gass Syndrome).

DISASTER MEDICAL MANAGEMENT PLAN AT A REMOTE AIR BASE: LESSONS FOR A WIDER APPLICATION

Wg Cdr A Agarwal, Wg Cdr S Sharma
Armed Forces Medical Services, India

Disaster is a sudden catastrophic event, which can overwhelm the resources available at any place. The response to disaster is dependant upon resources, which by the very definition of disaster, are always short. Optimal use of resources is thus they key to disaster management. Resources

become more meager as one goes away from big cities, and better planning is required to tide over a disaster. The armed forces play an important role in disaster management all over the world. Of these, the air force being capable of reaching in the shortest time is called out most often. This paper uses a remote air force base as a model for planning disaster in a small place. The strength and weaknesses of the plan are discussed.

COMPARATIVE EVALUATION OF INDIRECT BONDING VIS-À-VIS DIRECT BONDING TECHNIQUE IN ORTHODONTIC TREATMENT

Wg Cdr Anil Dhingra
Armed Forces Dental Services, India

Two different methods of Orthodontic bonding were used in a sample of 40 patients from mixed group from 12 to 18 years of age, seeking Orthodontic treatment. Out of them 20 patients comprising of 268 teeth were subjected to Direct Bonding technique- i.e. bonding the attachments directly to the teeth with composite resin. The remaining 20 patients comprising of 239 teeth were subjected to Indirect Bonding technique- i.e. placing the attachments on stone models at pre-determined positions with the help of wear soluble temporary adhesive, making silicone transfer tray or so-called positioners and then of transferring the attachments from the models to the teeth in the oral cavity during the course of Orthodontic treatment. After the initial observation period of 6 months in each case, the bond failure rate for the former technique was found to be 9.33 percent and that for the latter technique was found to be 9.62 percent. Since the difference in the bond failure rate in both these techniques was not statistically significant, the Indirect Bonding technique promised to be equally effective clinically as the Direct Bonding technique and thus has been recommended to be the choicest technique in most situations.

SURVEY OF LIFESTYLE FACTORS OF MIG 29 AIRCREW AT AN IAF BASE

Wg Cdr I Chakraborty
Armed Forces Medical Services, India

Lifestyle related diseases are on the rise all over the world. Aircrew, too, are likely to face similar health risks. A questionnaire survey was conducted at a MiG 29 base of the Indian Air Force to understand the lifestyle of the aircrew. The survey revealed that the aircrew hardly smoked and consumed alcohol in moderation on weekends. They were satisfied with aircrew cafeteria food. Majority of the aircrew played regular games and a number of them undertook regular weight training. They were getting enough sleep, in spite of their flying commitments. Most of them got the weekends to themselves. Half of the aircrew felt stressed out sometimes and also worried about office matters sometimes during their rest time. Only 15% of the aircrew practiced yoga or mediation for active relaxation,. A majority of them could get quality time for themselves and their families. 92% aircrew were satisfied with the social environment of the squadron. 4% resorted to alternate medication and 27% resorted to self-medication for minor ailments. 27% aircrew consulted civil doctors for medical treatment.

MUSCULOSKELETAL DISABILITIES IN AIRCREW CHALLENGES IN AEROMEDICAL DECISION MAKING

Wg Cdr Narinder Taneja
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Abstract

Musculoskeletal disabilities are a leading cause of morbidity in the population as well as armed forces. Clinical recovery from such disabilities is achieved after the patient undergoes definitive surgical therapy and rehabilitation. However, a proportion of these patients may continue to suffer from psychological morbidity and pain long after clinical and radiological finality has been reached. This is of particular significance in aircrew where conservation of highly trained and skilled human resources has to be balanced with flight safety. The Department of Human Engineering and Human Factors is the nodal agency in the institute that is responsible for evaluation of all aircrew with musculoskeletal disabilities. Such cases, in particular disabilities affecting the spine with some element of coexisting psychological morbidity can present aeromedical decision making dilemmas. It is in these cases that it becomes critical to understand and assess the psychosocial factors /psychiatric co-morbidity so that aircrew can be treated effectively. The aim of this paper is to describe and discuss four case reports of aircrew with spinal disabilities and the challenges in aero medical decision making involved in returning them to flying duties. High quality aero medical decisions need to be reasonable and replicable. As such they should be appropriate given the available information, the requirements set and the outcomes sought. They should also be internally and externally consistent and transparent. Psychosocial factors in musculoskeletal disabilities are receiving increasing attention from researchers, occupational health policy makers and epidemiologists. While different models to explain work related musculoskeletal disabilities are available in the literature, there has been no research documenting the role of psychosocial factors among aircrew with musculoskeletal disabilities. We believe that there may be factors that are unique to the aircrew profession. These could include nature of trauma, type of non flying duties performed, the ability or inability to pursue career ground courses during the period of grounding and the impact of disability on career progression especially so in comparison to their peers. The paper elaborates the above in relation to certain aircrew who have been evaluated in this institute recently.

TITLE: SHOCK RESUSCITATION: THE PRINCIPAL OF GOLDEN HOUR

Wg Cdr RM Sharma, Lt Col R Setlur
Armed Forces Medical Services, India

The golden hour is the standard of care in the resuscitation of patients with hemorrhagic shock. This does not refer to a specific unit of time but is intended to emphasize early initiation of therapy. The concept has been further extended by a recent study showing improvement in mortality in early goal directed therapy for septic shock. This has a rational physiological basis. Early resuscitation of shock patients irrespective of etiology should improve mortality. We conducted a retrospective observational study of the post resuscitation outcomes of patients resuscitated with this strategy.

Records of 30 patients admitted with the diagnosis of Septic/Hemorrhagic shock to a tertiary care center over the past two years were reviewed. 10 patients were in Grade III- IV hemorrhagic shock and 20 in septic shock. All patients received early goal directed therapy with fluids to achieve predetermined goals. The only difference in circulatory management of septic shock and hemorrhagic was in vasopressor protocols.

Out of 10 patients of hemorrhagic shock 9 patients survived. Three patients had refractory shock and needed norepinephrine, dobutamine, and vasopressin infusion in addition to ventilatory support. One patient died of multi-organ failure. Among 20 patients of septic shock 50% developed resistant shock requiring vasopressin infusion in addition to catecholamines. Mortality in septic shock was thirty percent.

Early goal directed resuscitation led to a survival of 90% in hemorrhagic shock and 70% in septic shock. Timely intervention in the form of fluid resuscitation, blood transfusion and vasoactive drug transfusion reduces the morbidity and mortality in patients with hemorrhagic and septic shock.

ROLE OF NURSE IN CANCER PAIN MANAGEMENT

Maj Suma KS

Armed Forces Nursing Services, India

Statistics related to cancer partially reflect the magnitude of the problem of cancer in our society. Cancer patients perceive pain as gruesome, horrible & uncontrollable. Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Cancer pain depends on the location of cancer and stage of tumour activity. Anxiety, past experience to pain, culture and religion affects patient's response to pain. Pain assessment is the cornerstone of effective pain management. Detail history regarding characteristics of pain, location, duration, quantity and quality of pain, aggravating, alleviating and associated factors need to be collected. Physiological, behavioural, affective responses, interference of pain with patient's daily activities and coping strategies adopted by patient need to be assessed. Pain management includes administration of pain medications round-the-clock with additional breakthrough medications as needed. WHO's analgesic ladder serves as guidelines for effective management of pain. Non pharmacological pain control also serves as an adjuvant for teaching patients for effective self-control of pain. Effectiveness of non-pharmacological management like relaxation, slow rhythmic breathing, imagery techniques are more in patients who are with intact cognition. Home care of patients and pain control at home is a challenging task for nurses as issues related to cost, adequate care provider, willingness to learn, diversion of opioid and supply of medication need to be kept in mind. Since pain is an emergency for the person with cancer and because of the distress it causes nurses should respond to cancer pain immediately.

SECULAR TRENDS IN MALARIA IN THE INDIAN ARMY

Col L S Vaz, Maj A Sreenivas

Armed Forces Medical Services, India

Abstract

Background

Malaria has been generally linked with Army campaigns. A study of the secular trends in the Indian Army would give an insight into the measures taken to control the disease and the pit falls in the path to eradication.

Methods

A retrospective study on the incidence of malaria since the time records have been maintained in the Indian Army was collated and analyzed for trends in the long and short term.

Results

Despite the immunological benefit of being locals data from the early nineteenth century shows a higher incidence of malaria in Indian troops compared to British troops. The secular trends shows a rapid decline till the mid 1950's. With the introduction of national control programs the disease was substantially reduced in the decades 1950 - 1970. However the resurgence after 1972 was a cause for concern. The disease has today been brought under control and has plateaued in the Army.

Conclusion

A study on trends in malaria in the Indian Army has shown its rise and fall through the decades. Though the disease has plateaued in the Indian Army it may again show resurgence if renewed control measures are not implemented.

INJURIES NON ENEMY ACTION (NEA) IN INDIAN ARMED FORCES

Col A Gunasekar and Lt Col Kunal Chatterjee
Armed Forces Medical Services, India

Injuries (NEA) are the most important cause of morbidity in all the three services. Road Traffic Accidents and injuries during training activities are the common mode of occurrence of injuries in the Armed Forces.

The presentation aims to highlight the epidemiological triad of injuries (NEA) in Indian Armed Forces. The recommended measures for reducing the incidence of injuries (NEA) are also brought out.

HIGHER HIV-1 INCIDENCE AND GENETIC COMPLEXITY ALONG MAIN ROADS

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Objective: To determine the association between the incidence of HIV-1 infection and the genetic complexity of HIV-1 strains in two geographic strata within Rakai District, Uganda.

Methods: Study volunteers with recent HIV-1 infections during the period 1997-2003 were recruited from ten communities that were geographically stratified as either a main road trading center (n = 5) or secondary road trading village (n = 5). Cryopreserved plasma was available from 384 volunteers and was the source of viral RNA for genotyping by the Multi-region Hybridization Assay (MHAacd). Statistical analyses were used to determine associations between HIV-1 subtype distribution by gender and strata.

Results: The HIV-1 incidence rate during the period 1999-2001 was 1.3 per 100 person years (PY) in the trading centers and 1.1 per 100 PY in the trading villages. The HR for infection with an HIV-1 recombinant strain in trading centers relative to trading villages was 2.3; 95% CI 1.0-6.7. Among those who changed residence between village strata the HR for a recombinant HIV-1 infection was 8.1; 95% CI 0.4-47.7.

Conclusions: HIV-1 incidence and genetic complexity are associated with geographic strata, and population mobility in Rakai, and are important variables to be considered in planning and recruitment for vaccine trials.

UNDERSTANDING THE PSYCHOLOGY OF TERROR: EMPLOYING SOCIAL PSYCHOLOGY TO AID MILITARY MEDICINE AND MENTAL HEALTH

David G. Brown, Psy.D., LTC Ronald T. Stephens, M.D

This paper presents applications gleaned from decades of social science research on mortality and its particular relevance toward operational and international medicine, humanitarian assistance, and peace keeping in the Asia-Pacific region. Although mortality is a natural event in the sequence of life, experimental existential psychology is replete with empirical data on cross cultural reactions to the threat of death and its influence on subsequent emotions, cognitions, and the shaping of ones worldview. While fear, anxiety, and uncertainty may generate various reactions, this paper will focus primarily on defensive attributions, ambiguity avoidance, cognitive closure, and terror management theory as buffers used to ameliorate cognitive discomfort. As a cornerstone of professionalism in military medicine, a working knowledge of specific social psychological concepts may foster cross cultural understanding while also aiding in diplomacy, the establishment of sound mission goals, and overall mission success

DEVELOPMENT AND MANUFACTURE OF A PARENTERAL DOSAGE FORMULATION OF α -ARTESUNIC ACID AND ITS PLACEBO

William Y. Ellis, R. Spangford, M. Johnson, M. Maniar, and P. Lim

In response to the U.S. Army's need for an antimalarial parenteral dosage form for the treatment of severe and complicated malaria, we have developed and manufactured a product in compliance with the U.S. Food and Drug Administration (FDA) cGMP. This product has been approved for an investigational new drug and is currently undergoing clinical trials at the Uniformed Services University Health Sciences (USUHS). The product consists of a vial of dry-filled, sterile α -artesianic acid and an ampoule of dissolution medium. When the two are combined, the resulting sterile solution is suitable for parenteral administration.

SHIFT MODIFICATION ON A NAVAL PLATFORM

David Fun CY, Diana Teo SY, Victor Goh HH

In a 2-crew shift schedule, it was found that the sleep duration of personnel on the graveyard shift is significantly shorter. As a result, they showed a greater degradation in performance. 50 crewmen were recruited and divided into two groups: 30 crew in Group A on the 7-on-5-off/ 6-on-6-off schedule and 20 in Group B on the 6-on-6-off schedule. Both groups were subdivided into work schedules shown below. Performance was measured using 3 tests in the Swedish Performance Evaluation System - the Symbol Digit Match test to evaluate the speed and ability to interpret and match correctly visual and mental perception; the Digit Span Memory test to evaluate short-term memory; and the Logic Sequence test to evaluate accuracy and speed.

0600-1300h 1300-1800h 800-2400h 0000-0600h

Gp A1 Rest Work Rest Work

Gp A2 Work Rest Work Rest

0600-1200h 1200-1800h 1800-2400h 0000-0600h

Gp B1 Rest Work Rest Work

Gp B2 Work Rest Work Rest

Overall mean digit length for Gp B1 was significantly shorter than for Gp B2. A similar trend was observed for the overall number of directional change, with Gp B1 significantly higher than that of Gp B2. In addition, the overall reaction times for both Logic Sequence and Symbol Digit Match tests for Gp B1 were significantly longer to Gp B2. On the other hand, comparing results from the 3 tests did not reveal significant differences between Gps A1 and A2. It was found that with an extra hour of sleep for Gp A1 and despite an extra hour of work for Gp A2, volunteers in both groups were more equitable in their performance. This proves that by slight modification of the shift pattern, one can improve the performance of naval personnel, hence supporting the hypothesis set forth for this study.

UNIT-BASED SURVEILLANCE SYSTEM: 4-YEAR EXPERIENCE, THE SUCCESSES AND FAILURES

Col Jariyanart Gaywee, MG Thawatchai Samutsakorn, LTC Khunakorn Kana, MAJ Pradith Kaewsatien, Mr. Prasert Meesuksabye, Ms. Rapida Padmasankh, COL Narongrid Sirisopana, and LTC Rodney L. Coldren,
Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

The Unit-Based Surveillance System has been developed in collaboration between AFRIMS-RTA, AFRIMS-USAMC and Suranaree Command, the special Royal Thai Army Force responsible for the northeastern Thai-Cambodia border, since 2001. The goal is to monitor any diseases of military importance in real time in order to rapidly respond for outbreak control. The unit-based surveillance system is designed to collect medical data by infantry soldiers and to analyze by medical personnel. Everyday, the smallest infantry units collect data and send to their command by any convenient methods; either military radio or fax machine. Information is then recorded into a Microsoft Access®-based program called UBS at each Task Force Headquarters and electronically sent thru the internet to AFRIMS main frame for analysis. Although the data was daily collected, it was practically submitted to the central unit twice a week. The outcome of project is a 4 year-accumulative medical information of this border area where the routine Thai public health surveillance system was unable to cover. We have also learned from both successes and failures processes. Finally, a practical fast track

communication system was developed and ready to be implemented in other border areas. If the system was fully implemented, we would have a reliable national disease surveillance system covering the entire country including otherwise unreachable areas.

OCCUPATIONAL REHABILITATION IN THE MILITARY ENVIRONMENT - THE NORTH QUEENSLAND EXPERIENCE

Lieutenant Colonel, Jon Hodge, Australian Defence Force, Australia

Occupational rehabilitation can be defined as “a managed process involving early intervention with appropriate, adequate and timely services based on assessed needs and which is aimed at maintaining injured or ill employees in, or returning them to, suitable employment”. A rehabilitation program implies a framework which governs how rehabilitation is delivered. Such a program can be a combination of processes and procedures, facilities and personnel. Implementing an occupational rehabilitation program into a military setting has particular challenges, including the interface with the command chain, cultural issues with both the injured soldiers and their command chain, and the significant occupational stresses to which soldiers are exposed. This paper describes these challenges, as well as providing a description of the introduction of such a program in North Queensland.

USE OF INSECT SCREEN TO PREVENT AND CONTROL INSECT BORNE DISEASES IN MILITARY CAMPS ALONG THAI-MYANMAR BORDER IN TAK PROVINCE THAILAND; PRELIMINARY PROJECT

Maj Pradith Kaewsatien, 1st MSG Narupon Kuttasingkee, 1st MSG
Bungauang Indontri, LCPL Kiatisak Somsri
Col Jariyanart Gaywee and Col Narongrid Sirisopana,
Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

Military areas of operation (AO) along Thai-Myanmar border in Tak province, Thailand, are known as malaria endemic. This places immunologically naïve soldiers annually deployed to this area at risk of contacting the disease. To prevent troops from malaria, control strategy including health education, use of pyrethrin coated personnel bed net and insect repellent, elimination of mosquito and its breeding sites has been strongly recommended. Nevertheless, approximately 10% of soldiers were infected each year. The constant high infection rate may reflect to the incompleteness of malaria control practicing. Conducting a continuous malaria surveillance program in this AO for more than 5 years, we noticed that infection rate in some military camps decrease after insect screens were installed. We decided to use insect screen as an additional method for malaria control in this endemic area. During May to July 2005, insect screens were installed on every 39 camps in this AO. Evaluation of this method includes monitoring malaria infection rate and satisfaction survey using self completed questionnaire. The preliminary 6 month-evaluation revealed slightly decrease malaria infection rate in high prevalence camps. Self complete questionnaire demonstrated that over ninety percents of troops were satisfied. Twenty percents complained about inconvenient and disadvantage of insect screen.

IMPACT OF INTRODUCING THE NATIONAL HEALTH INSURANCE ON THE SOLDIERS

Chulhwan Kang

Background: In spite of the introducing the National Health Insurance system in South Korea (1989), the Korean soldiers were excluded from the National Health Insurance System. All of the Korean soldiers have to receive medical treatment at the military medical treatment facilities. The reform on medical insurance system in 2004, Korean soldiers made it possible to get medical services at the private medical facilities. After introducing the National Health Insurance System in the Military Medicine Sector, the number of outpatients had risen up to 213% and the number of inpatients increase up to 109%. And the Ministry of National Defence has to pay \$20 million per year. Purpose: 1. Realize the aspect of medical utilization and behavioral change before and after introducing the National Health Insurance System. 2. Analyze the influence of rank, residential district, educational status, economical status, characteristics of the Unit, and geographical features. 3. Analyze the acceptance and satisfaction of introducing the National Health Insurance System. Method: 1. Analyze the difference between before/after introducing the National Health Insurance System on the aspect of Medical Utilization and Behavioral Change (paired t-test).

- Total Medical Utilization/ Physician Visit
 - Ages
 - Rank
 - Educational status
 - Economical status
 - Geographical accessibility
 - Characteristics of the Unit
2. Analyze determining factor of the Medical Utilization Following model (Multiple Regression Model) is developed to understand the influence of the variables. Total Medical Utilization = f (age, rank, educational status, economical status, geographical accesibility, characteristics of the Unit, etc).
 3. Analyze the level of acceptance and satisfaction. Using the structured questionnaire make an investigation to find the level of acceptance and satisfaction.

IRON DEFICIENCY AND ANEMIA: HEALTH DISPARITY EXISTS BETWEEN CHILDREN LIVING IN AMERICAN SAMOA AS COMPARED TO CHILDREN LIVING WITHIN THE UNITED STATES

LTC Teresa M. Kemmer, LTC Maria Bovill

Description: Healthy People 2010 emphasizes elimination of health disparity and improvements in nutritional status including anemia and iron deficiency (ID). This cross-sectional study of children ages 12 to 60 mo living in American Samoa was designed to 1) determine the prevalence of anemia, ID and iron deficiency anemia (IDA) and 2) compare the prevalence to that found within children living in the United States. Hemoglobin (Hb) < 110.0g/L was used to determine anemia and erythrocyte protoporphyrin (EP) >70μmol/mol was used as the indicator for ID. Results: Within the 211 children assessed, 52% were female. Anemia, ID and IDA prevalence within children ages 12-60 mo was 33%, 70%, and 33% respectively. The results of children from the National Health and Nutrition Examination Survey (NHANES 1999-2000) were anemia, 9%; ID, 10% and IDA, 2%. ID is positively associated with children breastfed < 6 mo (P<0.03) and IDA is associated with lower household income (P<0.01) after adjusting for age and gender. Recommendations: Health disparities exist and additional child health initiatives should be implemented to promote long-term health prevention and provide treatment. Treatment for IDA should be initiated upon diagnosis. Counseling on adequate and diverse dietary intake, including the incorporation of iron fortified foods, should be provided in addition to the promotion of public health measures. Prevention should be the number one priority. To meet Healthy People 2010 goals, it is critical to ensure that all populations within the United States, including its territories, are provided appropriate resources to promote health and prevent disease.

PRELIMINARY REPORT OF THE FINDINGS OF THE AUSTRALIAN DEPLOYED HEALTH SURVEILLANCE PROGRAM

Scott Kitchener

In 1999, the then Australian Minister for Defence, Science and Personnel, announced that health reviews (of veterans) would be conducted for all future overseas deployments. From this the Deployed Health Surveillance Program (DHSP) has been developed in a collaborative approach primarily between the Australian Defence Health Service and the Centre for Military and Veterans' Health (CMVH). Previously in Australia, post-deployment health studies have been retrospective studies examining health issues which have arisen from veterans' concerns on return from deployment or hypotheses generated in descriptive studies of veterans' health. The aim of the DHSP at CMVH is to replace that approach with a prospective, analytic system. This system is capturing routinely collected exposure and health outcome information related to more recent deployments of the ADF. For future deployments baseline data will be collected before deployment. These data would then be compared with data obtained on the same individuals post deployment and with an Era group. The Program establishes systems for longitudinal surveillance of health by collecting individual health measurements which are practical for large epidemiological studies and which produce valid, reliable and timely data. The core of the Program is the formation of an integrated data system including access to other data sources such as the Australian National Death Index and National Cancer Registries as well as self-reported (questionnaire) and routinely collected health (Annual Health Assessments) and (deployment) exposure information. The pilot project of the Program is a study of the veterans of the InterFET Operations in 1999 and 2000. Data has been collated from the initial comparison with the National Death Index, including causes of death. Details of the pensions received by these veterans are available. Initial mail-outs have been conducted and response rates determined. The structure of the Program will be discussed and this preliminary information will be presented.

SUSCEPTIBILITY OF DRUG-RESISTANT BACTERIA TO AN ANTIMICROBIAL PEPTIDE, H1-2

LEUNG, Kai P.

Antimicrobial peptides represent a diverse group of peptides that function as the first line of defense in many organisms. They represent attractive alternatives to antiseptics and antibiotics for infection control because they have a remarkable selectivity for prokaryotes, a lower propensity to induce microbial resistance, and show activity against a number of drug-resistant bacteria. Our laboratories have developed and synthesized a novel antimicrobial peptide consisting of 25 amino acid residues designated as H1-2 that showed a broad range of antimicrobial activity.

Objective: We sought to determine the structural features of H1-2 and the efficacy of this molecule in killing drug-resistant strains, many of which were clinical isolates.

Methods: The three-dimensional structure of this peptide antibiotic in aqueous solution and membrane environments was determined by NMR. Susceptibility of tested organism to H1-2, expressed as Minimum Inhibitory Concentrations (MICs), was determined using a broth microdilution method. Minimum Bactericidal Concentrations (MBCs) were determined by spiral plating tested organisms that had been exposed to dilutions of H1-2 at and above the MICs onto blood agar plates. Results: H1-

2 adopted an alpha-helical structure in membrane environments. This antimicrobial peptide exhibited potent antibacterial activity against a number of multiresistant and nosocomial pathogens, which included multidrug-resistant *Acinetobacter baumannii*, methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococci*, and *Pseudomonas aeruginosa*.

Conclusion: This study shows that H1-2 may be a useful antimicrobial agent to prevent and control infections associated with some of the drug-resistant pathogens.

PHYSICAL FITNESS SURVEY IN ROYAL THAI ARMY PERSONNEL

Lieutenant Colonel Pannee Pantaewan, Lieutenant Colonel Nongpimol Nimit-arnun, PhD, Lieutenant Dangjai Souvannakitti, Lieutenant Colonel, Ram Rangsin, Dr PH, Royal Thai Army, Bangkok, Thailand

A cross-sectional study was performed during January-July 2005 to survey physical fitness in Royal Thai Army personnel. Army personnel from 11 Army posts aged 20-60 years were interviewed for medical history. Body weight, height, waist and hip circumference were measured. Body mass index (BMI) and waist-hip ratio (WHR) were calculated. Subsequently, participants performed the physical fitness test which was set by Royal Thai Army as follows: push-up, sit-up in 2 minutes and 2-kilometer run. Of the 4,423 participants of Army personnel were 4,030 males (91.1%) aged 41.5 ± 8.5 years and 393 females (8.9%) aged 38.5 ± 10.1 years. The average BMI for male and female were 24.0 ± 3.3 and 22.1 ± 3.6 kg/m², respectively. The average WHR for male and female were 0.88 ± 0.06 and 0.77 ± 0.06 , respectively. In the physical fitness test, male personnel in the 17 to 21-year age group had the greatest number of push-ups/sit-ups and the lowest run time. Average physical fitness test score in male and in female were $67.0 \pm 9.2\%$ and $65.9 \pm 9.5\%$, respectively. As a group, most Army personnel (96.6%) passed the standard of physical fitness test. Physical fitness data was proposed to be the physical fitness criterion using the percentile ranking. In conclusion, this study provided baseline data on the physical fitness in Royal Thai Army personnel which may be used as a further guideline for developing physical fitness test programs and a criterion reference standard of physical fitness test for Royal Thai Army personnel.

EFFECT OF MICROENCAPSULATED TRANSFORMING GROWTH FACTOR-BETA1 ON INCISIONAL WOUND MODEL OF RATS

Sohita Patel, Ph.D, Chief, Chemistry Branch, USADTRD, Great Lakes, Illinois, United States; Dennis Runyan, Colonel, U.S. Army, Great Lakes, Illinois, United States; James Macholl, Lieutenant Colonel, U.S. Army, Great Lakes, Illinois, United States

Growth factors are considered to play important roles in inflammation and wound healing. Transforming Growth Factor-beta1 (TGF-beta1) is known to stimulate wound-healing events.

Objective: The goal of this study is to microencapsulate TGF-beta1) using Ploy Lactide-co-glycolide (PLGA). **METHOD:** TGF-beta1 is microencapsulated by PLGA via water/oil/water double emulsion solvent evaporation method. TGF-beta1 release is measured by ELISA. Microspheres loaded with

100ng of TGF-beta1 were applied to an Incisional wounds of rats.

Results: The data demonstrates that PLGA is used successfully to microencapsulate biologically active TGF-beta1 with a sustained release of several days. In-vivo data shows that there is only a slight support that the dosage used for this study improved healing.

Conclusion: The results of this study show a in-vitro sustained release of TGF-beta1 for several days, however the dosage administered was not statistically significant to accelerate wound healing.

THE POSSIBLE ANTIGENIC SOURCES OF BRUGIA PAHANGI

J Roongruangchai, K Pilakasiri, K Roongruangchai, C Pilakasiri and P Sobhon

The antigenic sources of adult and the third larval (L3) stages of *Brugia pahangi* were detected by indirect immunofluorescent technique. Six panels of antisera were used, including human antisera against *Brugia malayi* and *Wuchereria bancrofti*, cat antisera against *B malayi* and *B pahangi* and jird antisera against *B malayi* and *B pahangi* as primary antibodies. All antisera gave the same results, although four of the six were not infected by *B pahangi*. This indicates non-species specificity, and that *B pahangi*, *B malayi* and *W bancrofti* may share most of the natigenic molecules. All antisera reacted well with the surface of L3 *B pahangi* in the whole mount preparation. This may indicate non-stage specificity as well as non-species specificity.

A STUDY OF PREVALENCE AND RISK FACTORS OF GIARDIASIS IN PRIMARY SCHOOL CHILDREN OF BAAN NAYOA PRIMARY SCHOOL, CHACHEANGSOA, THAILAND

Supawat Ratanapo, Chakri Faithed, Suthipong Soontrapa

Introduction: *Giardia intestinalis* infection is still a significant health problem in Thailand. Severe infection in children causes malnutrition with stunt growth and development. According to a survey of parasitic infections in 2002 at Ta kradan sub district, Chacheangsoa province, among the infected group aged less than 18 years, *G. intestinalis* was found approximately one third. However, a study of risk factors of *G. intestinalis* infection in Thailand especially in the rural community has not been reported.

Objective: To obtain the prevalence and risk factors of *G. intestinalis* infection in primary school children of Baan Nayoa Primary School, Chacheangsoa Province.

Design: Cross-sectional study.

Materials and Methods: Stool specimens were collected from 531 students grade 1-6 from the primary school children of Baan Nayoa primary school, Ta kradan sub district, Chacheangsoa province. *G. intestinalis* was identified using direct simple smear and Flotation technique. To determine the risk factors of giardiasis, standardized questionnaires concerning demographic data and sanitary behaviors were used in this study.

Results: The prevalence of *G. intestinalis* infection was 6.21%. Using multivariate analysis, significant risk factors of *G. intestinalis* infection in this population were children aged less than 10 years old, having more than 4 children aged less than 12 years old at home, and educational level of parents less than primary school. In the present study, most of the infected cases were asymptomatic.

Conclusion: In this population, the prevalence of *G. intestinalis* infection was still prevalent. Prevention and control strategies should be performed in the high risk groups including improving of personal hygiene through health education lessons and considering suitable mass chemotherapy in order to treat the infected cases and reduce the transmission in this population.

SURVEY OF RESERVOIR HOSTS AND VECTORS FOR SCRUB TYPHUS IN TSUNAMI TEMPORARY SHELTER, KHAO LAK-LUMRU NATIONAL PARK, TAI-MUANG DISTRICT, PHANG-NGA PROVINCE, SOUTH OF THAILAND

**Maj Wuttikorn Rodkvamtook and Col Jariyanart Gaywee, Armed Forces
Research Institute of Medical Sciences, Bangkok, Thailand**

Scrub typhus caused by gram negative obligate intracellular bacterium, *Orientia tsutsugamushi*, is a significant health problem throughout Asia, Australia and the Pacific region. Infection occurs when humans enter into its natural life cycle, in which arthropod vectors (mite larvae called chiggers) and small mammal reservoirs (rodents) are associated. In late January 2005, we preliminary found a scrub typhus case who was a 26 December 2005-tsunami victim. Thirteen days after moving back from Tsunami shelter, the high ground in Khao Lak-Lumru National Park, Tai Muang Distract, Phang-nga, Thailand, this 9-year old girl developed high fever, headache, skin rash and eschar. IFA test demonstrated high antibody titer against OT, IgM = 1:1600 and IgG = 1:800. To evaluate whether this shelter area was the infectious foci of this disease, we investigated further for the presence of scrub typhus vectors and reservoir hosts. In August, rodents were captured and their ectoparasites were collected. Sixteen of 17 rats (94%) were positive for scrub typhus by IFA. Wild collected ectoparasites were identified as chiggers; *Leptotrombidium deliense* and *L. akamushi*, specific species reported as scrub typhus vectors. These findings suggested that the high ground in Khao Lak-Lumru National Park, Tai Muang Distract, Phang-nga, is potentially the risk area for scrub typhus infection.

EFFECTS OF CYCLE RATE AND ENVIRONMENT ON THE FATIGUE STRENGTH OF MEDICALLY PURE TITANIUM

COL Dennis A. Runyan

Objectives: Medically pure titanium is often used as an implantable replacement material for missing bone and teeth following trauma in load bearing regions. Its biocompatibility and strength make it a highly useful material for these purposes. However, titanium implants have demonstrated fatigue failure when subjected to cyclic, low stress loading during the chewing cycle. Under normal loading

conditions, fatigue cracks initiate near singularities and mechanical strength decreases. Growth of fatigue cracks at low cyclic stresses ultimately leads to failure. Fatigue testing can be extremely time consuming. Loading a titanium dental implant at 2Hz to 5,000,000 cycles takes approximately 29 days. Accelerating the cycling rate to 15Hz shortens each test to approximately 4 days. However, decreasing the testing time also decreases the exposure time of the fatigue crack tip to the aqueous environment. The purpose of this study is to measure effects of increased cycling speed on the fatigue strength of titanium dental implants in different environments.

Methods: Titanium dental implants were tested at 2Hz and 15Hz in air, 37 deg C distilled water and 37 deg C 0.85% sodium chloride. 5,000,000 cycles was considered a successful test.

Results: The ultimate tensile strength of the titanium dental implants was 738 N (+/- 138.6 N). Fatigue strength when measured at 2Hz was 225 N in air, 200 N in water and 250 N in sodium chloride. There was no statistically significant decrease in fatigue strength of titanium dental implants in aqueous environments when tested at 2Hz. When tested at 15Hz the fatigue strengths were 250 N in air, 275 N in water and 250 N in sodium chloride. There was a statistically significant increase in fatigue strength of titanium dental implants in aqueous environments when tested at 15Hz. There was a statistically significant increase in fatigue strength in air and water, but not sodium chloride, when tested at 15 Hz when compared to 2Hz.

Conclusions: The increase in fatigue strength at 15Hz in aqueous environments could be a result of increased heat dissipation overcoming the corrosive effects at the crack tips. This would also indicate the 2Hz fatigue test more accurately duplicates the fatigue characteristics of the oral environment.

EVALUATION OF LEPTOSPIROSIS BY POLYMERASE CHAIN REACTION (PCR) IN CULTURED SAMPLES AND CULTURE POSITIVE PACKED RED BLOOD CELLS

Kurt Schaecher

Leptospirosis is a zoonotic infection with world wide distribution and a potentially fatal outcome in some infected humans. Current methods, such as micro-agglutination tests (MAT) and blood culture, to diagnose leptospirosis are time consuming and largely left to ambiguous interpretation, require a sophisticated laboratory and technical staff, and do not have a quick turn around time for results. Diagnostic tests that generate results quickly, cheaply, and clearly are greatly needed. Polymerase chain reaction (PCR) detection is one such method, but efforts to date have yielded an inadequate correlation with MAT and culture systems. We assessed four primer sets for annealing temperature and cycle amplification on four different cultured *Leptospira interrogans* serovars, *Australis australis*, *Australis bratislava*, *Autumnalis autumnalis*, and *Autumnalis bim*. We also assessed the sensitivity of the most effective primer set in a nested PCR assay against all four cultured serovars, being able to detect as low as 1 cell/ml. Lastly, we were able to successfully amplify the *Leptospira*

16S rRNA gene from the packed red cells of four patients whose blood was positive by the culture method.

SURVEY OF PATHOGENIC FREE-LIVING AMOEBAE IN WATER RESOURCES OF THE ROYAL THAI ARMY INSTALLATIONS

Col Prangchai Settachan

The free-living, amphizoic and opportunistic protozoa such as the genera *Naegleria*, and *Acanthamoeba* are amoebae commonly found in soil, water and air samples from all over the world. In the last ten years, human infection due to these amoebae involving brain, skin, lung and eyes has increased significantly. These may lead to three well-defined disease entities: a rapid fatal primary amoebic meningoencephalitis (PAM), chronic granulomatous amoebic encephalitis (GAE) and a chronic amoebic keratitis (AK). The free-living amoebae can act as host cells for intracellular replication of pathogenic bacteria, *Legionella* spp. In Thailand, the first case report of PAM was published in 1983. Since then, there have been several reports concerning these free-living amoebae in Thailand. The purpose of this study is to determine the presence of the amoebae in water resources of the Royal Thai Army installations. The total of 102 samples (51 water samples and 51 soil samples) were collected from 12, 9, 21 and 9 fresh water resources in the Royal Thai Army Area 1, 2, 3 and 4, respectively, covering 17 provinces of Thailand. Water and soil samples were cultured and free-living amoebae were isolated. Water samples were analyzed for water quality. The results show that thirty six (70.6%) samples from 15 provinces were amoeba positive. Only *Acanthamoeba* spp. Was isolated from the cultures, whereas *Naegleria* spp. was not found in any of the samples. This result may not agree with other studies where both species were usually found together. Conclusively, these findings may have profound implications regarding the surveillance of water systems for the amoebae, with particular respects to the prevention of diseases, directly or indirectly, resulting from these organisms in the Royal Thai Army installations.

INVESTIGATION OF IMMUNOLOGICAL MARKERS ON T-LYMPHOCYTE FOR CLINICAL USED IN HIV INFECTED INDIVIDUAL

Suchitra Sukwit

The role of CD8 T-lymphocyte responses during the course of HIV-1 human infection are not well understood. We investigated the expression of the activation marker (CD38) and plasma viral load (VL) from 62 HIV-positive individual and 30 HIV-negative controls by three-color flow cytometry. Within the HIV-positive group, 42 subjects were on antiretroviral therapy. The remaining 20 HIV-positive persons were not on therapy and had detectable plasma viremia. The expression of CD38 on CD8 T-lymphocyte (as number of CD38 molecules per CD8 T-lymphocyte) was higher in HIV-positive, untreated patients than in subjects on antiviral therapy and controls (7739, 5505 and 1953 molecules per CD8 T-Lymphocyte, respectively, $p < 0.01$). A few individuals presented viral blips whereas being on antiviral treatment, level of CD38 on CD8 T-Lymphocyte increase transiently in parallel with episodes of viral replication. The value of CD38 expression on CD8 T cells are increase in chronic HIV infection and correlate with plasma viremia, independently of the CD4 count. Effective antiretroviral therapy reduces this subset in parallel with plasma viremia. Multivariate regression analyses of activation markers with numbers of viral load showed that the number of CD38 molecules on CD8 T-lymphocyte is the best independent marker. For other activation markers, HIV-1 positive persons did not show significant increase CD69 expression. Levels of CD3+ HLADR+ T lymphocyte are high in HIV infection

and show a significant negative correlation with CD4 counts ($r=0.5$; $p<0.001$). For CD95 (Fas antigen), the increase in Fas expression was found on CD3 T- lymphocyte in HIV+ patient. In conclusion, our findings support the importance of expression of CD38 antigen on CD8 T-lymphocyte as a biological and clinical marker of HIV infection and indicate its usefulness for monitoring of the efficacy of HARTT therapy.

THE INTEGRATION OF A DIABETES RISK SCORE FOR THAI POPULATION IN RURAL AREA AGED OVER 35 YEARS OLD

Supanitayanon

5th year Medical Cadet, Phramongkutklao College of Medicine, Bangkok, Thailand;

Introduction: Universal screening for diabetes in general population currently in use may prove to be cost-ineffective. Moreover, the existing risk scores for diabetes might only represent the specific minor group of population and cannot be generalized across populations. We, therefore, developed a simple risk scoring method to identify high-risk individuals for the screening of diabetes in Thai adults.

Objective: To integrate and formulate new risk scoring equation for identifying high-risk individuals in the screening of diabetes in Thai adults.

Study design: Cross-sectional analytic studies.

Materials and Methods: Two-hundred and eighty-one Thai adults, 112 males and 169 females, with unknown past diabetes record, aged more than 35 years old, were studied during February 12th 2005 to February 16th 2005. The information obtained from each subject was based on the history given by the individual during the visit. The data collection was conducted by using demographic data, such as, rank, name, age, marriage status, income, information on diabetes mellitus (DM) signs, symptoms and risk factors, family history of large baby delivery, family history of diabetes mellitus, underlying diseases, alcoholic drinking, smoking, and exercise. Then the subjects' blood pressure as well as height and weight would be measured and recorded by the medical cadets. Body mass index (BMI) was then calculated.

Formulating the equation, the predication rule was developed by a stepwise multiple logistic regression analysis. Independent variables associated with diabetes included age, BMI, and family history of DM.

Results: Total number of 281 subjects was enrolled in this study. The statistical result yielded the prevalence of diabetes mellitus in the study group of 9.61%. The area under the receiver operating curve (ROC) for using the risk equation yielded sensitivity and a specificity of 96.3% and 24.4% respectively. The positive predictive value was 12.4% and the negative predictive value was 98.3%.

Conclusion: We have developed a simple risk scoring method to be used in the screening of DM in Thai adults in rural areas. The risk score should be helpful in decreasing the number of unnecessary screening and optimizing the costs associated with diabetes screening.

USE OF THE CIVILIAN HEALTH PROMOTION PROGRAM AT USACHPPM-PAC

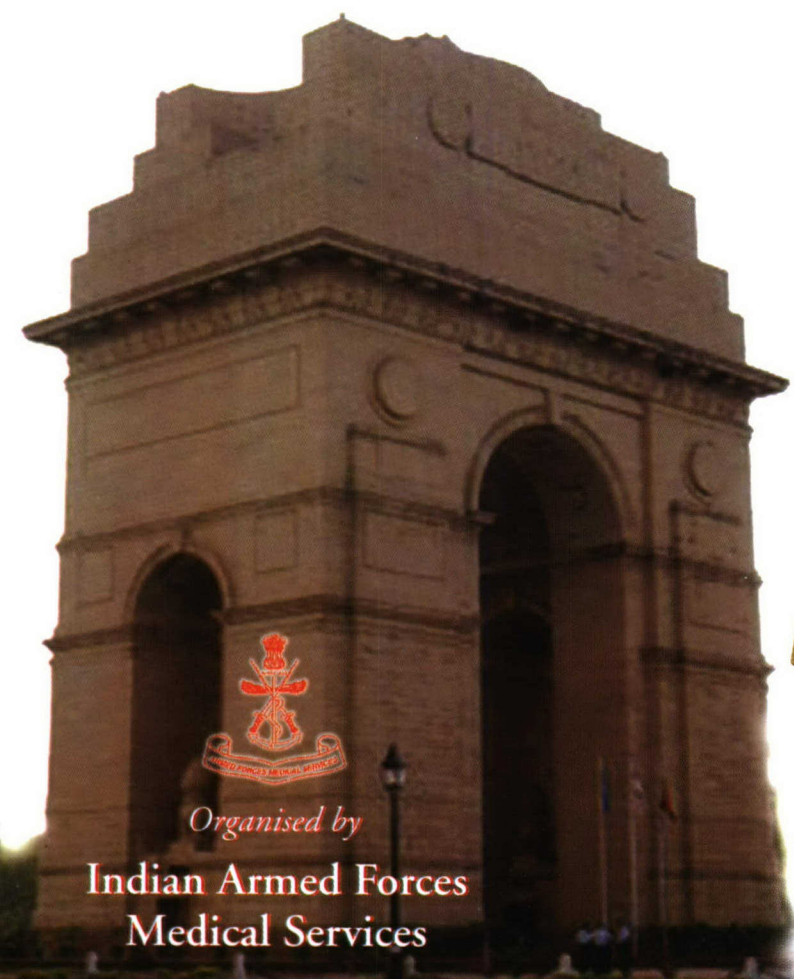
Col Julie Zadinsky, Ms. Jana York, CPT Jesse Kooker

The Civilian Health Promotion Program is a Department of the Army program available to commanders for the purpose of encouraging civilian employees to improve their health and fitness through exercise and other positive health habits. At USACHPPM-PAC, the program includes up to 3 hours per week excused absence for civilians to participate in command sponsored formal physical exercise training, innovative exercise and nutritional education, a Climb to Wellness incentive program, and a pre- and post-program participant evaluation with monitoring during the program. Challenges were encountered in trying to include host nation employees in the program, but the program was designed in such a way that all staff could be included in part of the program. Individual participants have found benefits of weight control, better stress management, and overall improved fitness. These benefits are being better quantified as new measurements among the participants are being taken.





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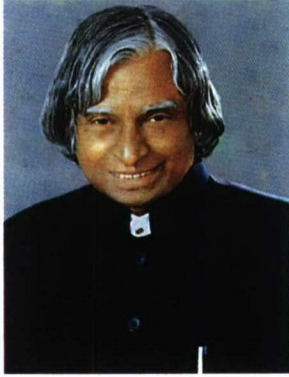


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MESSAGE

The President of India, Dr. A.P.J. Abdul Kalam, is happy to know that the Directorate General of Armed Forces Medical Services is organising the 16th Asia Pacific Military Medicine Conference during March 27-31, 2006 at New Delhi in association with the United States Army Pacific.

The Conference is an ideal forum for the Military representatives of the nations of the region to exchange and share their professional knowledge and skills for cooperation in all fields of military medicine which would prove beneficial to 'mankind'.

The President extends his warm greetings and felicitations to the organisers and the participants from India and abroad and wishes the Conference all success.

PRESS SECRETARY TO THE PRESIDENT



MESSAGE

It is very heartening to know that the Directorate General Armed Forces Medical Services and the United States Army Pacific are co-hosting the prestigious Asia Pacific Military Medicine Conference at New Delhi from 26 to 31 March 2006.

The Military operates in diverse and challenging terrains and thus Military Medicine is truly medicine sans borders; it goes beyond boundaries of glaciers, deserts, the sea and the sky. It calls for evolving of new and revolutionary treatment regimes. This valuable storehouse of knowledge needs to be shared and disseminated globally for the mutual benefit of our brethren cutting across borders and ideologies.

The increasing deployment of the Armed Forces Medical Personnel to aid the civil populace in the aftermath of natural and man made disasters has meant that Military Medicine has entered a new dimension. These experiences need to be documented and principles formulated in a global forum such as the APMMC.

I am sure that the XVI APMMC will prove to be an ideal platform for enhancing knowledge and understanding the nuances of Military Medicine on issues as diverse as combat medical support, crisis response and advanced medical research.

I take this opportunity to extend my warm greetings to all delegates and wish the conference all success.

New Delhi
January 31, 2006

(Pranab Mukherjee)



एडमिरल अरुण प्रकाश

पी वी एस एम, ए वी एस एम, वीर चक्र, वी एस एम, ए डी सी

नौसेनाध्यक्ष

Admiral Arun Prakash

PVSM, AVSM, Vrc, VSM, ADC

Chief of the Naval Staff

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एकीकृत मुख्यालय

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Integrated Headquarters

Ministry of Defence (Navy)

New Delhi-110011



MESSAGE

Armed Forces Medical Services around the world are entrusted with the onerous and vital responsibility of caring for the health of personnel in uniform, both in war and peace, very often under the most difficult and trying conditions.

With increasing cooperation between the Armed Forces of nations, it is important that issues of common interest such as combat medical support, clinical research, education and preventive military medicine be discussed with a view to evolving better solutions to common problems. The Asia Pacific Military Medicine Conferences (APMMC) have become an important forum in this regard and serve the very useful purpose of bringing medical professionals of the Asia-Pacific Region on a common platform.

I am sure the APMMC-XVI, co-hosted by the Director General of Armed Forces Medical Services and the US Army Pacific, will serve to further promote cooperation between medical professionals of the region. I take this opportunity to extend my warm greetings to all delegates and participants, and wish the conference all success.

(Arun Prakash)

Admiral

Chief of the Naval Staff



एयर चीफ मार्शल एस पी त्यागी
प वि से मे अ वि से मे वा मे ए डी सी
Air Chief Marshal SP Tyagi
PVSM AVSM VM ADC

वायु सेना मुख्यालय
नई दिल्ली-११००११

Air Headquarters
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MESSAGE

- 1. I am pleased to know that the Director General Armed Forces Medical Services (DGAFMS) and the US Army Pacific (USARPAC) will be jointly conducting the Asia Pacific Military Medicine Conference XVI (APMMC-XVI) from 27 to 31 Mar 06 in Delhi.***
- 2. The theme of the APMMC-XVI 'Military Medicine - Striving for Excellence' has been aptly chosen keeping in view the ethos of the Armed Forces. I am confident that the deliberations at this mammoth Conference will be helpful in further improving the health care in the Armed Forces. Besides, the Conference will promote the esprit de corps among the military medical professionals of the Asia Pacific Region.***
- 3. On this occasion, I extend my felicitations to all the organisers and the participants of APMMC-XVI and wish good health to the Armed Forces.***

Jai Hind !

**AIR CHIEF MARSHAL
CHIEF OF THE AIR STAFF**

05 Feb 06



MESSAGE

It is a matter of honour for the Directorate General Armed Forces Medical Services to co-host the XVI Asia Pacific Military Medical Conference from 27-31 Mar 06 at New Delhi.

Military medical professionals the world over have the onerous task of providing comprehensive medical care to the combatants wherever deployed. They also render medical support to civilian populace in the aftermath of natural and manmade disasters, as in the post Tsunami relief effort. To carry out these tasks it is imperative that military medical professionals remain abreast of the latest in the fields of medical research, education and practice of preventive and curative medicine.

The XVI APMMC will be an ideal forum for healthy interaction amongst medical professionals of the militaries of the region, especially in areas of relevance to military medicine. This forum can also play a vital role in functioning as an effective mechanism for cultivating mutual understanding, cooperation and stability in the region.

I am certain that this prestigious venture involving member nations of the Asia Pacific region will generate quality inputs and value additions to the current level of practice of medical care in the Armed Forces.

I take this opportunity to convey my best wishes to the organizers and participants and wish this conference all success.

(J J Singh)
General



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रक्षा सचिव
Shekhar Dutt, SM
Defence Secretary
TEL. : 23012380
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भारत सरकार
रक्षा मंत्रालय
रक्षा विभाग
नई दिल्ली - 110 011
Government of India
Ministry of Defence
Department of Defence
New Delhi - 110 011



MESSAGE

I am happy to know that the XVith Asia Pacific Military Medicine Conference is being held at New Delhi from the 26 to 31 March 2006.

Military medicine needs constant upgradation to face the emerging threats in the present day complex environment. While addressing the health and safety of your own troops is primary, coordinating civilian health care service in disaster situations is also of paramount importance.

This conference is a golden opportunity to promote cooperation and collegiate fraternity among nations of the region by coupling recent deployment experiences with the latest medical advances. It would also provide an avenue for promoting health care for the military and civilians alike through exchange of actionable medical knowledge.

I am sure the feasibility of the evolving joint operating procedures incorporating latest technological advances for tackling mass casualty situations can be very well explored. The APMMC is an ideal scientific forum that can influence technological and doctrinal issues affecting modern military medicine.

I wish the conference all success and extend my greetings to the organizers and participants.

(Shekhar Dutt)

February 24, 2006



सर्जन वाईस एडमिरल विजय कुमार सिंह, पी वी एस एम, ए वी एस एम, वी एस एम, पी एच एस
महानिदेशक सशस्त्र सेना चिकित्सा सेवा एवम वरिष्ठ कर्नल कमान्डेन्ट
Surgeon Vice Admiral V K Singh, PVSM, AVSM, VSM, PHS
Director General Armed Forces Medical Services & Senior Colonel Commandant
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कार्यालय महानिदेशक
सशस्त्र सेना चिकित्सा सेवा
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'एम' ब्लॉक, नई दिल्ली- 110001
Office Of Director General
Armed Forces Medical Services
Ministry of Defence
'M' Block, New Delhi -110001



MESSAGE

1. The Indian Armed Forces Medical Services are indeed privileged to be co-hosting the XVIth Asia Pacific Military Medicine Conference at New Delhi with the United States Army Pacific from the 27 Mar 2006 to 31 Mar 2006.
2. The Asia Pacific Military Medicine Conference since its modest beginning in the year 1990 in Honolulu, Hawaii has grown in stature and importance as the years have rolled by. It has today come to be recognized as an ideal platform where military medical professionals from the region and beyond, exchange views and experiences related to a wide array of subjects pertaining to military medicine. I am sure that this year will see the conference attain new heights.
3. The theme for this year's conference is "Professionalism in Military Medicine – Striving for Excellence." The theme is indeed apt as today's military medicine has transcended the conventional role assigned to medical services. Today when one considers military medicine, it is not limited to war surgery or combat medicine. It envisages the entire gambit from the soldier at his home, work place, at war and in the role of providing relief during man made and natural national and international disasters. It further extends to their spouses and dependants and can be considered as one of the finest models of a health service providing comprehensive medical care.
4. For the military medical services to perform these manifold roles they require to stay abreast of the latest in the field of medicine and to share their experiences with others in a similar role. It is for this reason that the Asia Pacific Military Medicine Conference assumes great significance. The Indian Armed Forces Medical Services will leave no stone unturned to make this conference a truly rewarding experience.
5. The conference is being held at New Delhi a truly vibrant and fascinating city with its art, architecture, culture and its cuisine. It is indeed a pulsating modern metropolis coexisting with centuries of Indian tradition and cultural heritage and I hope the international fraternity will enjoy every bit of their stay at the metropolis.

Station : New Delhi

Date : 13 Feb 2006

Vijay Kumar Singh
(VK Singh)
Surg Vice Admiral



लेफ्टिनेन्ट जनरल एम एल चावला, पी वी एस एम, वी एस एम
महानिदेशक अस्पताल सेवाएं (सशस्त्र सेना)

Lt Gen M L Chawla, PVSM, VSM

Director General Hospital Services (Armed Forces)

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कार्यालय महानिदेशक
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'एम' ब्लॉक, नई दिल्ली-110001
Office Of Director General
Armed Forces Medical Services
Ministry of Defence
'M' Block, New Delhi-110001



MESSAGE

It is heartening to know that the sixteenth Asia Pacific Military Medicine Conference is being co-hosted by the Directorate General of the Armed Forces Medical Services and US Army Pacific at Hotel Taj Palace, New Delhi from 26-31 Mar 2006.

Military medicine is an unique and well-established discipline and system of medical practice supported by extensive literature and scholarly activities with broad applications across the entire spectrum of medical specialties. While the care of Armed Forces Personnel is primary, the care of civilians also, albeit in special circumstances has assumed great importance with an increasing occurrence of natural and man-made disasters.


I am sure that this forum will be an ideal ground for interactive sessions and in evolving common doctrines for a quick response to global disaster situations. Quality debate and exchange of ideas among the experts on topics of mutual interest will definitely enhance the scientific temper and stimulate research in respective fields. The incorporation of technology as a force multiplier to help provide care in remote and far-flung areas may also be considered in the proceedings.

I am sure the exchange of ideas and information will go a long way in translating, experience and research into our health care system.

I wish the participants and the organizers of the conference a great success.

Station : New Delhi

Dated : 20 Mar 2006


(M L Chawla)
Lt Gen
DGHS (AF)



सर्जन वाईस एडमिरल पुनीता अरोड़ा, एसएम, वीएसएम
महानिदेशक चिकित्सा सेवाएँ (नौसेना)
Surgeon Vice Admiral Punita Arora, SM, VSM
Director General Medical Services (Navy)
Tele : 23012081
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Integrated Headquarters
Ministry of Defence (Navy)
New Delhi - 110 011.



MESSAGE

1. It gives me great pleasure to learn that the Directorate General of Armed Forces Medical Services is co-hosting the XVI Asia Pacific Military Medicine Conference (APMMC) from 26 Mar to 31 Mar 2006 at Hotel Taj Palace, New Delhi along with United States Army Pacific Command with representatives from over 30 countries.
2. This unique international event will provide a forum for interaction between visiting medical professionals with exchange of ideas and new research proposals which will help in promoting advancement of health care both for the military as well as the civil clientele. Very often in the past scientific work intended for military applications has contributed vastly to the improvement in the quality of life for mankind in general.
3. I am confident that the deliberations of APMMC will be fruitful and generate healthy discussions.
4. I wish the organizers all the success in their noble endeavour.

(Punita Arora)
Surg Vice Admiral
Director General Medical Services (Navy)

Dated : 27 Jan 06



एयर मार्शल एच के मैनी, वी एस एम

महा निदेशक चिकित्सा सेवा (वायु)

Air Marshal H K Maini, VSM

Director General Medical Services (Air)

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Air Headquarters
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RK Puram
New Delhi-110066



MESSAGE

1. It is a matter of great honour for the Directorate General of Armed Forces Medical Services to be co-hosting the XVIth Asia Pacific Military Medicine Conference with the United States Army Pacific from 27 Mar to 30 Mar 2006 at New Delhi.
2. The field of military medicine with the additional vistas of aviation medicine, underwater medicine and high altitude medicine is advancing at a pace that requires regular interaction amongst specialists of different disciplines.
3. Our capabilities in different scenarios of combat, low intensity conflicts and disaster relief will be greatly benefited by absorbing the professional experience of other militaries to good effect. The focus of the conference on key areas of concern including Aerospace Medicine is noteworthy.
4. I wish the organizers all success and the delegates a professionally enriching experience.

18 Jan 06


(HK Maini)
Air Marshal



लेफ्टिनेन्ट जनरल एल पी सधौत्रा, ए वी एस एम
महानिदेशक चिकित्सा सेवाएं (सेना)
एवं कर्नल कमान्डेन्ट
Lt Gen L P Sadhotra, AVSM
Director General Medical Services (Army)
& Colonel Commandant
Tele : 23093334, 23373982 (O)

चिकित्सा सेवा (सेना) महानिदेशालय
सेना मुख्यालय
'एल' ब्लॉक,
नई दिल्ली- 110001
Dte Gen Medical Services (Army)
Army Headquarters
'L' Block,
New Delhi-110001




MESSAGE

1. It is a singular honour and special privilege for the Directorate General of the Armed Forces Medical Services to be co-hosting the XVI Asia Pacific Military Medical Conference with the United States Army Pacific at New Delhi from the 27th to 31st Mar 2006. From its modest beginnings in 1990, the APMMC has grown to its current status of a truly international annual event for the military medical professionals of the region.
2. The APMMC provides a stage for exploring and showcasing the various facets of Military Medicine including Combat Medical Support. It is hoped that deliberations during the conference will result in development of a medical service that will not only serve the Armed Forces more efficiently but also support the civilian populations during disasters. It should also be able to achieve the envisaged goal of expanding the joint and combined interoperability.
3. The threats posed by HIV/AIDS and Avian pandemic flu are fine examples of disease settings that can politically and economically destabilize governments and result in imbalance of regional stability across the globe. I am glad to note that both these diseases have been listed among the topics for the plenary sessions during the conference.
4. I am confident that the APMMC will serve as a sounding board for formulation of an effective crisis response strategy for member nations through mutual military cooperation and interaction.
5. I wish the very best for the organizers and participants of conference.

Station: New Delhi

Dated: 25 Jan 2006


(LP Sadhotra)
Lt Gen
DGMS (Army)



लेफ्टिनेन्ट जनरल परमजीत सिंह, ए वी एस एम, वी एस एम **
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एल ब्लॉक, थल सेना मुख्यालय
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Dte Gen Dental Services
Adjutant General's Branch
'L' Block, Army HQ
New Delhi - 110 001



MESSAGE

It is a matter of pride and honour that the Directorate General Armed Forces Medical Services is co hosting the XVIth Asia Pacific Military Conference with the United States Army Pacific from the 27-31 Mar 06 at New Delhi.

Military medicine is a very modern and meticulous health delivery system that caters not only to the personnel in uniform and their dependants but increasingly to the civilian populace of the nations also. Keeping abreast with the latest in medicine and diagnostic technology is very essential to maintain the high quality of service that is required of the military medical professionals.

There has been an emergence of global threats and common enemies that do not recognize geographical boundaries. This has necessitated that nations of the world come together and make joint efforts for tackling such threats and formulate policies to negate the effects of such events.

The evolvement of APMMC over the years into an established forum of continuing medical education among military medical professionals is a great step forward not only in exchanging medical knowledge of mutual benefit but also developing a better networking between member nations in their attempts for regional stability and peace.

I am sure that this year's conference will also see deliberations of the highest standard on varied and live health issues that will go a long way in redefining our approaches to the same. This conference will be fruitful in augmenting the understanding, trust and rapport among the member nations.

I wish the organizers of the conference and delegates all success.

New Delhi

27 Feb 2006


(Paramjit Singh)
Lt Gen
DGDS

Welcome from the United States Army Pacific



On behalf of the United States Army, Pacific, I welcome you to New Delhi, India and to the Sixteenth Asia-Pacific Military Medicine Conference. We are delighted that you are able to attend this year's conference.

This year's theme, "Professionalism in Military Medicine: Striving for Excellence," provides us the opportunity to discuss essential issues for the military healthcare community in the Asia-Pacific Region. Our conference theme clearly expresses our commitment to enhance medical readiness and professional development of regional armed forces. Recent avian flu outbreaks demonstrate the reality that our military healthcare challenges and responsibilities are truly global and require

our mutual planning and operational efforts. When we add the demands of the Global War on Terrorism, the need for our medical contribution becomes even more clear.

I encourage each of you to fully utilize the Asia-Pacific Military Medicine Conferences as a forum for information exchange, to improve efficiency of our coalition operations and maximize the healthcare provided to our respective military members. Throughout the week, I encourage you to renew acquaintances and foster new friendships that will add to the stability and security of our rapidly changing world.

I am certain your experience at this year's conference will be professionally and personally rewarding. India offers magnificent historic and cultural sites – which are sure to make this week even more memorable. The United States Army Pacific is privileged and honored to co-host this conference with India's Armed Forces Medical Services (AFMS). I extend my personal welcome and look forward to meeting with each of you this week.

A handwritten signature in black ink, appearing to read "Gale S. Pollock".

Gale S. Pollock
Major General, U.S. Army
Command Surgeon
U.S. Army, Pacific

Maj Gen J Jayaram AVSM
Organizing Committee Chair Person



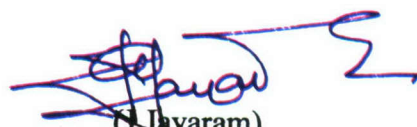
FROM THE CHAIR PERSON'S DESK

The Asia Pacific Military Medicine Conference since its inception in 1990 has been functioning as a unique forum for the military medical professionals of the Asia Pacific region to come together to deliberate on vital health related issues. Since its modest beginning in Honolulu, it has grown in stature and gained acceptance as an ideal platform for military medical professionals of the region, to exchange views on various aspects of military medicine for providing life long comprehensive health care to the soldier and his family. It also serves to augment regional stability and co-operation.

Hosting of the APMMC XVI is indeed an honour as well as a privilege for the Indian Armed Forces. Meticulous care and planning has gone into each and every aspect of the conference to ensure its smooth and unhindered conduct. While selecting topics for the scientific sessions, due attention has been given for subjects of current relevance meshing with the envisaged objectives of the conference. Adequate time has been allotted to deliberate on contemporary topics like Pandemic Flu, HIV/AIDS, Aid to Civil etc, which are posing a challenge to the medical fraternity while not losing sight of our primary role of providing life support during combat. I am sure the delegates will advance their knowledge by their interaction with the other distinguished professionals who will gather for the conference.

A conference of this magnitude would not have been possible without the administrative and logistic support from the three services. The support received from the Army, Navy and Air Force has indeed provided us the infrastructure for the conference and we are deeply indebted to the services for the same. I am also indebted to the offices of the Director General's Medical Services of the three services for their co-operation, unstinted support and guidance from time to time. I am grateful to our co-hosts the United States Army Pacific for giving the Indian Armed Forces an opportunity to co-host the continuing conference for the second time after 1995. It was indeed a pleasure and a learning experience for us all to work with Major General Gale S Pollock, Command Surgeon of the United States Army Pacific, and her highly professional and able team. Last but not the least, I am thankful to the dedicated staff of my APMMC Secretariat and all others directly or indirectly associated in making this conference a splendid success.

I am confident that the delegates will benefit from the deliberations as well as cherish every bit of their stay at New Delhi, the vibrant and fascinating capital city of India.


(J Jayaram)
Maj Gen

USARPAC AND APMMC: DOWN MEMORY LANE

Introduction

There is a new world order in place which veers away from traditional rivalry and regional issues and focuses on tackling new enemies. Primary among them are global terrorism and ethnic conflicts which are raising their ugly heads in various parts of the globe. These new perils have no respect for international borders and indeed, world security in this century will depend on the ability of each country to manage these security risks.

The spirit of the Asia Pacific Military Conference (APMMC) devolves around the concept of increasing military medical cooperation among member nations of the Asia Pacific region and also serves as a platform to exchange ideas of global concern.



Session in Progress

Role of USARPAC

The United States Army Pacific (USARPAC) is a major component of the Armed Forces and supports the Commander, Pacific Command (PACOM) in their quest to pursue positive security relations with all nations in the area in the force of “deep engagement” and in promoting the active presence of US Forces and partnerships with friendly foreign armed forces. The major way in which the PACOM and USARPAC are working towards their goals are as under :

- (a) Joint exercises
- (b) Peacekeeping and humanitarian missions
- (c) Military conferences and military officers exchange programmes

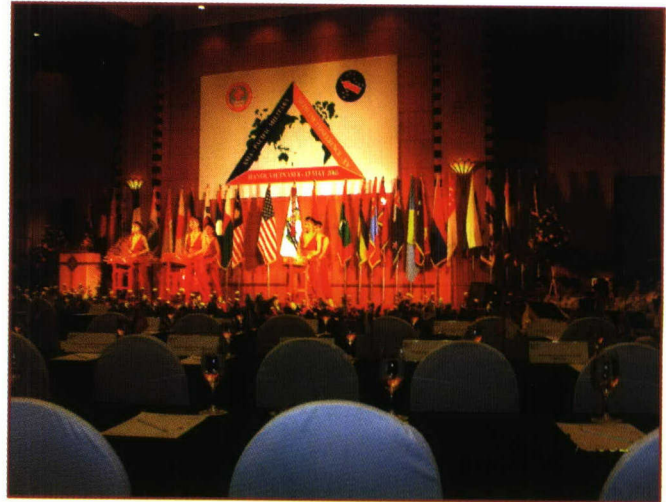
USARPAC is actively working towards maintaining strong Army – to – Army relations with their allies, forward basing of Army units, as well as frequent deployments throughout the region. The ‘Theater Security Cooperation Programme (TSCP)’ of USARPAC supports various initiatives that actively engage the military forces of friendly countries throughout the Pacific region. Civilian support projects in the area of civil affairs, engineering and medical aid are illustrations of this programme in action.

History of the APMMC

The APMMC is an excellent example of the US Army Medical Department’s (AMEDD) role in supporting USARPAC’s and PACOM’s TSCP. Historically, this program began in 1990 in Honolulu, Hawaii, with only 12 countries sending representatives and most of the faculty countries from either Tripler Army Medical Center, Hawaii or the various US military medical research laboratories around the Pacific. The Conference venues have been

- (a) Bangkok, Thailand in 1992
- (b) Jakarta, Indonesia in 1993

- (c) Honolulu, Hawaii in 1994
- (d) New Delhi, India in 1995
- (e) Sydney, Australia in 1996
- (f) Kuala Lumpur, Malaysia in 1997
- (g) Auckland, New Zealand in 1998
- (h) Bangkok, Thailand in 1999
- (j) Singapore in 2000
- (k) Auckland, New Zealand in 2001
- (l) Kuala Lumpur, Malaysia in 2002
- (m) Bangkok, Thailand in 2003
- (n) Brisbane, Australia in 2004
- (n) Hanoi, Vietnam in 2005



Opening Ceremony at Hanoi, Vietnam during the
XV APMMC

It returns back for the sixteenth iteration at New Delhi in March 2006 at the Convention Centre of the Hotel Taj Palace with the theme “Professionalism in Military Medicine – Striving for Excellence”. The significance of this meeting to the countries attending is attested to by the attendance of numerous flag officers including the US Army Surgeon General.

Goals and Objectives

The APMMC focuses on achieving various goals and objectives :

- (a) Providing of strategic support of the TSCP plan of the Commander, PACOM and the Commanding General, USARPAC.
- (b) It provides a platform throughout the Pacific to exchange information about military medical issues common to all uniformed medical forces. This meeting clearly fosters the development of military-to-military friendships and extensive discussion of a vast array of clinical, academic and operational topics.
- (c) A specific objective of the conference is the expansion and facilitation of joint and combined interoperability. This objective provides US medical forces in the Pacific the experience of working and training with friendly nation forces in the Pacific. Examples include combined participation in humanitarian and disaster relief operations, and routine MEDCAP/MEDRETE operations. These activities facilitate more effective responses to regional crises and afford greater regional stability.
- (d) The conference also supports professional development of military medical forces of all participating countries. It enables officers from over 30 different countries, with diverse levels of medical sophistication, to interact in a friendly, collegial atmosphere. The mutual trust and friendship that develops, in turn, supports the goal of improving joint and combined capabilities of all nations throughout the region.

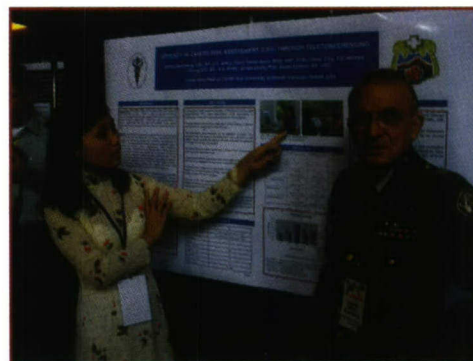
Now in its sixteenth year, the conference has continued to improve with each new iteration. Initially focused on Tropical Medicine, subsequent meetings have expanded to cover virtually any subject related to military medicine. Each annual conference has a main theme, providing the focus for the scientific sessions. Past themes have included Medical Readiness, Evacuation, Infectious Disease, Preventive Medicine, Humanitarian

Assistance and Healthcare Delivery Systems with the theme at Hanoi in 2005 being “Military Medicine – Cooperation and Friendship”.

The conference is structured to provide the maximum flexibility for direct interaction between delegates from all nations. An important section is the Senior Medical Officers Forum. Hosted by the USARPAC Command Surgeon and the Senior Military Medical Officer of the co-host nation, this session brings together the senior military medical leaders of each country for open and frank exchanges covering any topic they wish to discuss. While the official language of the meeting is English, some countries do supply translators for their senior officers. Additionally, US medical officers who are fluent in Chinese and Russian serve to enhance the atmosphere of camaraderie and friendliness.

Modalities

Large-group plenary sessions, small-group and panel discussions, poster presentations and technological demonstrations, provide multiple formats for medical officers from all nations to present issues to their colleagues. A number of cooperative research projects have developed as a result of initial contact between researchers attending these meetings. In addition to the academic presentations, the host nations usually provide off-site visits to clinical and scientific venues. This provides the opportunity to showcase accomplishments of their national military medical system. A simulation symposium was also a major event at Hanoi during XV APMMC in May 2005. Several social and cultural events round out the weeklong program, promoting the goal of fostering mutual trust.



Poster Session in Progress at Hanoi,
Vitenam

Conclusion

The APMMC represents a major pillar in the AMEDD's support of Theater Security Cooperation. For 16 years, it has served as the main link between the AMEDD and the military medical forces of nations throughout the Pacific region. The APMMC has enlarged the number of military-to-military interactions between USARPAC and other Pacific armies, and has enhanced combined operability during humanitarian and peacekeeping missions in the area. Lieutenant General William Steele, USARPAC Commander, in his closing remarks to the conference delegates at the eighth APMMC, stated that military medical exchanges have proven to be the least threatening and most successful means of building trusting and lasting relations with other Pacific nation's armed forces.

ARMED FORCES MEDICAL SERVICES IN INDIA

The Indian Armed Forces Medical Services (AFMS) have a glorious tradition of pursuit of professional excellence and immense dedication in maintaining the morale of fighting forces on the battlefield and during peacetime by delivering timely medical care and treatment as also in the eventuality of any natural calamities.

The AFMS is a model of inter-service integration wherein all the three services of the Army, Air Force and Navy are jointly committed to the task of providing comprehensive health care services to its clientele. Common training is carried out as per the joint requirement of the three services and inter-service transfers and postings are resorted to meet the needs of specialist and medical officers in various establishments of the three services.



History

The history of integrated medical support on the battlefield dates back to the times of the great Indian epic of Mahabharata. However, the origins of the present day organised military medical services in India can be traced back to 1613 with the appointment of John Woodall as the first Surgeon General of the East India Company. Under him, European civilian medical officers were recruited on individual contracts. The Company gradually expanded its activities in various parts of India necessitating the formation and maintenance of regular bodies of troops. As a consequence, Military Surgeons were employed from 1745 onwards. It was not until 1764 that these Surgeons were made into a regular establishment of the Company's three Presidency armies of Bengal, Madras and Bombay. Thus, on 1st January 1764, the Bengal Medical Service was formed and the formation of the medical services by the other two Presidency armies followed soon thereafter.

In 1896, the three Presidential armies were amalgamated and the following year saw the merging of the three medical services into the Indian Medical Services (IMS) under a Surgeon General to the Government of India.

In the days of the East India Company there were no regular formations or units charged with the task of looking after the health of troops. In 1881, the British Regimental Hospitals gave way to British Station Hospitals for British troops. Later in 1881, the Army Hospital Native Corps was formed. With the abolition of the Presidency Armies by the Government and the evolution of the Army into 10 Divisions, the Army Hospital Native Corps was re-organised into 10 Companies as the Army Hospital Corps.

The association of nurses with the Armed Forces Medical Services commenced with the arrival of ten nursing sisters from England in 1888. Their presence improved the functioning of the hospital wards as a result of which the strength was subsequently increased and Indian Army Nursing service established.

Until the First World War, the IMS was predominantly civil in character, but gradually from 1912 onwards, those employed in civil duties became fewer in number. Indianisation of this service commenced from 1915.



Charles Donovan
(1865 -1926)



Sir Ronald Ross
(1857 – 1932)

Apart from their medical duties, members of the IMS took a leading part in research into tropical diseases and public health as the diseases endemic to India provided a rich field for study. Amongst the outstanding works were those by Sir Ronald Ross in identifying the mosquito as the carrier of the malaria parasite during 1877-99 and the identification of the parasite of Kalazar by Charles Donovan. In 42 members of IMS were awarded the Fellowship of the Royal society between 1660 and 1950 and Sir Ronald Ross was awarded the

Nobel Prize for Medicine in 1902 for his pioneering work on malaria.

At the start of the World War 1, the total number of authorised hospital beds was 6,077 for Indian troops and 5,044 for British troops. As a result, station hospitals were established in the former regimental hospitals, which were expanded as per the demand and other temporary arrangements undertaken to meet the pouring in of casualties from the battlefield and the increased requirements of mobilisation at home. Amazingly the military hospitals in India during 1939-45 treated approximately 4,568,393 sick and wounded in just under 1,97,539 hospital beds. During the War, the medical services saw action in Middle East, Africa and the East and performed creditably winning many accolades and awards.

Another branch, which developed under the pressure of the War, was the Army Dental Corps. Until then the Dental Officers of the British Army Medical Department provided dental care to the British troops and the Indian troops had to rely on the skills of the medical officers of the IMS. The considerable manpower wastage due to dental ailments prompted the Government in 1940 to grant emergency commission to trained Indian dentists in a special IMS (Dental) branch.

With more Indians being granted commission in the IMS, the six years of World War II enforced the change from a foreign medical service to an almost completely Indian one. The few Indians who had been commissioned in the IMS around the time of the First World War provided a nucleus of experience men fully capable of taking over the medical services on the departure of the British.

In its initial days after its formation on 8th October 1932, the Indian Air Force was provided medical support by the medical services of the Royal Air Force. By 1940 it had been decided that a separate branch of IMS would meet the medical requirements of the IAF.

Unlike the Air Force, the medical history of the Indian Navy is old and can be traced back to the arrival of the surgeons on board the warships of the East India Company in 1612. The ship's surgeon provided cover not only to the ship's company but also to troops ashore for whom medical facilities were not available from any sources. This arrangement continued till 1745 when a permanent shore organisation for the army was formed in the three Presidency armies. The IM British Cadre personnel generally provided the medical cover on ships at sea.

The idea of re-organising the medical services into a separate Medical Corps exclusively for the Defence Services was first conceived in 1939 with the outbreak of World War II. On 03 Apr 1943 The Indian Army Medical Corps (IAMC) came into existence as a homogeneous corps of officers and men on the pattern of the Royal Army Medical Corps by the amalgamation of the Indian Medical Service, the Indian Medical Department and the Army Hospital Corps. The Corps was formed as a wartime necessity for attracting suitably qualified men for service in a rapidly expanding army and overcame the large number of medical officers required for the war effort. As the numbers of British doctors available for service in India dwindled, Indian graduates and civil medical practitioners of long standing, were welcomed & given emergency commission. With the country declaring itself a sovereign republic the IAMC was re-designated as the Army Medical Corps (AMC) on 26 Jan 1950. Today the three services maintain distinct and separate composition of personnel below officers' rank. However, Medical, Dental and Nursing Officers belong to a common cadre in the AMC and are seconded to the Navy and Air Force as per requirement.



When the IAMC was formed in 1943 the colours adopted by the new corps were dull cherry red, black and old gold. Cherry red was the colour of the Royal Army Medical Corps and was associated with positive health, succour and freedom from disease. Black was the colour of Indian Army Hospital Corps and was associated with state of creation, birth and death. Gold represented the IMS component of the new IAMC. These three colours were retained for the flag of the AMC when created in 1950.

Training establishments

The acute shortage of specialists during the Second World War became worse with the departure of the British doctors of the IMS after the independence of the country. To meet the need of specialist doctors, the Armed Forces

Medical College (AFMC) was established at Pune on 1st May 1948 as a postgraduate Institution. Subsequently, an undergraduate wing was inaugurated on 4th August 1962. The standard of training imparted by the College has been of the highest order since inception and today it rates amongst the best three in the country. A College of Nursing has also been established at the AFMC in 1964.



Armed Forces Medical College at Pune

The AMC Centre & School located at Lucknow is responsible for imparting the basic military and technical training to the paramedical personnel of the Army. The Navy and Air Force have separate establishments to train the other ranks of their respective services. The technical skills of the other ranks are further improved by training them at various military hospitals. The Officers Training School of the AMC Centre conducts military training, training in combat medical support, general administration and hospital management for Medical and Dental Officers from the three services, Military Nursing Services officers and officers from the non technical cadre of the AMC soon after grant of commission and later at various stages in their careers preparing them for higher administrative appointments.

Present scenario

Today, the Indian Armed Forces Medical Services are a modern, professionally committed well-organised work force having an extensive network of more than 125 Hospitals. In their endeavour to provide state of the art health care to its customers, the medical services have undertaken major steps towards modernisation and introduced advanced medical gadgetry even for the field medical forces and the hospitals. Some of the hospitals have been developed as centres of excellence in various fields of medicine.



Keeping Pace With Medical Advances

These hospitals provide specialty care in various fields like Cardiology, Neurology, Respiratory Medicine, Endocrinology, Gastro-Enterology, Nephrology, Rheumatology etc. In addition certain hospitals have been developed to provide high-end care including Stem Cell Therapy, Joint Replacements, Assisted Reproduction, Cochlear Implants, Corneal Implants as well as Malignant Diseases treatment. The corps not only takes care of the serving personnel and their families but also pays equal importance to providing medical care to ex-servicemen and veterans. In addition to serving the uniformed personnel, the AMC rises to the occasion during the time of disasters and natural calamities in a highly reliable and responsive manner.



Army Hospital (R&R), New Delhi

INHS ASVINI, MUMBAI

Command Hospital Air Force, Bangalore

The Modern Hospitals In The Three Services

The organisation of the medical cover by the AMC in field has undergone several changes over the years. During the Second World War, the British pattern of Field Ambulances was in practice, which after the war with China was changed over to the American pattern of Medical Battalions and Field Hospitals with separate establishments for casualty evacuation and casualty treatment. With modernisation of the Indian Army and experience gained in previous wars, a modified British system of Field Ambulances is presently in vogue.



High Altitude Field Hospital at Siachen



HE, Prime Minister of Laos, Prince Suvanna Phauma visiting The "Laos-India Friendship Hospital"

Missions abroad

Detachments of the AMC have served outside India on many occasions, both in conjunction with army units and on their own also. Amongst the first one was the 60 Parachute Field Ambulance which arrived in Korea in November 1950 as India's response to appeal by the UN to provide aid to UN troops and it spent two and half years in Korea. The Supreme Commander of the Allied Powers and the Commander-in-Chief of the United States Forces in the Far East, Gen Ridgeway, commended the unit for the splendid job it performed. The General's admiration for the Indian Ambulance Unit was a result of its airborne medical work at the front. Complying with the request of the United States Forces, the unit members, within no time, descended on the battle area by parachutes and attended the casualties. Not only did they treat

serious cases, they promptly conducted major operations in the field itself. The United Nations observed that if the Indian Armed Forces were thrown into action to fulfil the aims of UNO, they would surely prove their high combat qualities.

In recent times, the medical services have had a major presence in most UN operations and their functioning has won them much admiration and laurels.

The Work and dedication of mission in Congo, Laos and Gaza, Lebanon, Afghanistan, Nepal, Bhutan, Oman, Algeria, Cambodia, Somalia, Rwanda & Sierra-Leone at various points of time have brought honour to both India and AMC.



AMC In Sierra-Leone



AMC is the First Corps to receive Colours after Indo-Pak War 1965

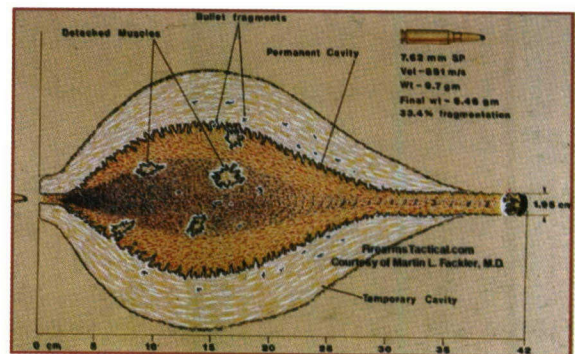
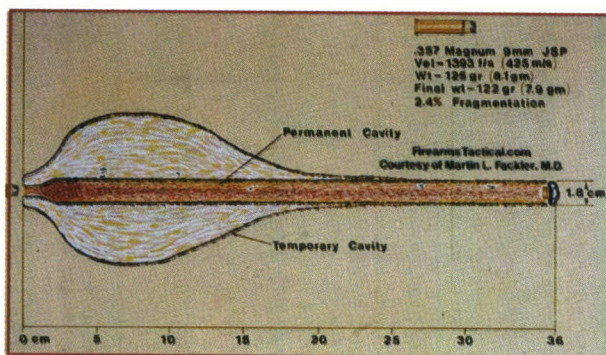
In recognition of the valuable services rendered by the Corps at home and abroad, in its allotted task of ensuring the highest possible standards of physical fitness amongst all ranks of the Armed Forces, the then President of India Dr S Radhakrishnan presented the Regimental Colours to the AMC on 3rd April 1966 at Lucknow, while extolling upon the men and officers to "keep the army always in a fit condition and to heal the sick and the wounded".

The AMC today is keeping step with the rapid pace of technological advancements and is leaving no stone unturned to acquire the latest for providing world class and quality services to its valued clientele. Propelled by its motto, *sarve santu niramaya* ('let all be free from disease'), the corps looks ahead to new challenges in the future.

MANAGEMENT OF WAR WOUNDS

Introduction

The management of military injuries is different than civil injuries because of various factors. Different weapons may cause different type of wounds. Missiles cause injury by producing laceration & crushing locally during passage of missiles and considerable damage at a distance from the wound track due to the shock waves generated. Also, the resulting wounds are not sterile as commonly believed. Temporary cavitations, 30-40 times the diameter of the missile, suck dirt, bacteria & foreign bodies thus contaminating the wound. Following injury, the individual may fall and contamination may take place further. Besides there maybe fragmentation of missile or bone producing secondary missiles.



Missiles produce large cavities which produce extensive damage & suck in foreign bodies

Blast injury may cause damage to lungs, hollow viscera or intra abdominal organs that might be missed initially & manifest later. All these factors need attention while prioritizing and planning their management. The other factor is delay in reaching the patient to a center. This may happen due to terrain, weather, and lack of evacuation facility or operational commitments.

The most important factor, which characterizes modern war wounds, is multiple traumas. In 1914 only 10 % of the hospitalized casualties were having multiple injuries. In the Sino-Indian conflict of 1962, the figure had already risen to 30 %. During the Yom-Kippur war in Sinai, 70 % of the wounded removed from tanks suffered from multiple injuries due to the blast and burns.



In Mine Blast injuries bone is pulverized, part is blown off and they produce heavily contaminated wounds

The other factor that makes war wounds different is that the casualties may be exhausted because of fatigue of long military operations. The casualties may reach in large numbers and the surgical team may not be able to handle all of them together. Making haste for treating a continuous flow of battle casualties does not mean that military surgery must be carried out in an atmosphere of confusion and disorder or that of standard principles of treatment being abandoned. On the contrary, intelligent planning, training and anticipation of the needs of the emergency, must be carried out to make the care smooth and flawless.

TRIAGE

When the demand for the treatment far exceeds the available resources, one must observe doing the most good

for greatest number at the proper time and in proper place by triage. There are two different standards of assessment to be applied when making a triage decision.

- (i) **Medical Tactics:** The actual tactical situation and its probable development determine the possibility of transport. Triage decisions must be based on the means available, the number of patients, terrain and weather.
- (ii) **Condition of the patient:** When assessing the condition of a patient, the following points must be taken into consideration: -

- (a) General condition, vital functions, respiration, state of consciousness, circulation.
- (b) Local situation.
- (c) Pain.
- (d) Medication already administered.
- (e) Time of injury

A triage decision is based on:

- (a) Approximate diagnosis.
- (b) Type of treatment.
- (c) Location of treatment.
- (d) Priority of transport.

PRIORITY-I: (Immediate resuscitation and urgent surgery). Patients with life-threatening injuries, who require treatment within 6 hours. 10-15 % of casualties fall in this priority

PRIORITY-II: (Early surgery and possible resuscitation). These patients must be treated within 12 hours. 15-20 % casualties are generally of Priority II.

Mangled Extremity Severity Score (MESS)

Type	Definition	Points
A	<u>Skeletal/Soft tissue injury</u>	
	Low energy (stab, simple fracture)	1
	Medium energy (open or multiple fractures)	2
	High energy (close-range shotgun or 'military' gun Shot wound, crush injury)	3
B	<u>Limb ischemia</u>	
	Pulse less, paraesthesia, diminished capillary refill Cool, paralyzed, insensate, numb	3
C	<u>Shock</u>	
	Systolic BP always >90 mm of Hg	0
	Hypotensive transiently	1
	Persistent hypotension	2
D	<u>Age (years)</u>	
	30 – 50	1
	> 50	2
AMPUTATION IS INDICATED FOR A SCORE		>8

PRIORITY-III: (All other sick and wounded) Patients whose treatment can be delayed up to 24 hours without risk to life or healing. A large chunk of battle casualties comprise this category (65-75%).

Control of bleeding in limb injury is best achieved by elevation and direct pressure for 5-10 minutes. Partial vessel injury may still bleed. If the bleeding continues, apply tourniquet and clamp bleeder under vision. Do not catch blindly as important structures like the nerves run along arteries. If tourniquet is not available, use sphygmomanometer cuff. Rope tourniquet may cause paralysis & is dangerous.

Amputation versus salvage

After resuscitation, make the most important decision. The decision to 'salvage or amputate the injured part.' This decision in some cases is straightforward but in some cases, it is difficult and requires an expert surgical opinion. As a rough guide to decide whether to do amputation or salvage the injured limb, MESS is a good indicator of prognosis and if MESS score is more than eight, the results after salvaging may not be satisfactory.

Treatment in forward area versus rear area

Certain principles should be followed when deciding who all should be treated in field area and up to what extent., Col Edward Churchill (US Army) had remarked that more the soldier is evacuated backwards more is the time taken for recovery and less is the motivation to come back to field. So walking wounded must be treated in periphery. Some soldiers will be so severely injured that they cannot be moved. For them, it will be necessary to have the capability to do life-saving surgery under extremely austere, even primitive conditions far forward.

After resuscitation, determine if the patient's needs are likely to exceed the hospital's capability. If answer is yes – evacuate to a proper center.

Col Edward Churchill developed the concept of Phased Wound Management for the US Army in the early days of WW II. Initial surgery to make the patient transportable with rapid evacuation to a rear hospital for reparative surgery permitted the speedy evacuation of large numbers of the most seriously injured patients; the initial surgical effort is not complete surgery. It is that "...initial effort required to save life and limb, preventing infection, and rendering the patient transportable..." Surgical procedures not essential to wound management at that time may make a transportable patient non-transportable and are avoided. "Reparative surgery was performed at base hospitals at the rear where the inability to move the post-operative patient was not a concern. This system of wound management allowed the forward hospitals to be moved frequently and concentrated resource-intensive patient care in the rear where hospitals were not required to move with the tactical situation.

Technology has extended the battlefield and also at the same time given us the capability to carry many patients over long distances in short periods of time. If sophisticated medical facility cannot be brought to the wounded, he must be brought to it. The medical system is racing a biological clock. The deterioration of human being after wounding is predictable over time. The compromise between what is medically desirable and military acceptable can be achieved if soldier receives advanced trauma life support within minutes of wounding by buddy care and arrives at the sophisticated medical facility within 6 hours, having received continuous medical attention enroute.

Replantation and revascularisation

Re-plantation is usually not possible in war wounds – due to mutilation & blown out tissues. However, Re-vascularisation must be done when the pulseoxymeter does not pick up signals in finger. In absence of pulsatile blood flow, claudication may develop on manual work. Reconstruction should be carried out only if capability of team is there and good outcome is expected.

Wound debridement

Most important requirement for early cover is thorough debridement, using tourniquet & magnification. It should leave wound as if surgically excised wound. If in first sitting, complete excision is doubtful, do second debridement 24-48 hours later. The edge of debridement should be in healthy tissue. Tendons, vessels should be bared. Nerve stumps should be anchored. Irrigation with copious saline must be used. Compartment syndrome can occur in open fractures also. Fasciotomy if needed, should be done early, otherwise partial necrosis of muscles occur & later, if these muscles are used for coverage of wounds, failure occurs. Between removing what is obviously dead & leaving what is viable there is a difference. It is that which makes the difference between failure & successful reconstruction. If debris is left, infection will develop, so prevent infection with scalpel rather than with antibiotic. Debride well, leave no dead tissue. Fracture must be immobilized. Tendon, nerve, joints, bone have to be covered. Tight closure leads to wound break down infection & further morbidity.

Management goals

With times, wound management priorities have changed. Initially there was an era of life preservation then came the era of limb preservation followed by the era of function preservation but now a days it is an era of function preservation & aesthetic acceptance.

Reconstruction

There are two approaches, first, do what you can, reach to a point where you can do no further reconstruction & then refer to another center. This approach is not acceptable. The other choice is to make a complete plan, do all steps correctly and achieve Good result. This is correct approach. There is honour in seeking help- better seek it early.

The results of reconstruction are poor in case of combined injuries i.e. Loss /injury in more than one structural system of the limb e.g. tendon, nerve, artery, vein, skin, bone, nail. Poor results are possible in polytrauma patients, or in-patients with associated illness like diabetes, IHD, hypertension, asthma. Excellent physician & anaesthesiologist are needed.

Once salvage is decided, the medical team must work together & carry out all stages to completion. Early cover enhances wound healing, prevents fibrosis & quickens rehabilitation. Thus reduces hospitalization time, cost, and time away from work. Give broad-spectrum prophylactic antibiotic. Wound can either be dealt with by simple closure, split skin graft, local flap, distant flap or free flap. The procedure is chosen as per the local wound condition, the need of further reconstructive procedure, patients demand and capability of surgical team. If flap is used, inset should be about 75-80%. Primary bone & tendon graft can be combined with pedicled graft for cover. Facial wounds must be sutured using 5 'O' suture.



Cross leg Flap cover has been given for extensive skin and soft tissue loss

Nerve injuries

In nerve injuries, initial assessment may not be exact specially in-patient with shock or patient having multiple wounds. Nonetheless, the precise clinical examination findings must be recorded for future reference. Do not explore closed nerve injuries. In open wounds, primary suturing of nerves gives poor results because exact extent of local damage to nerve can not be ascertained, elaborate



Face wounds must be meticulously sutured with 5-0 prolene after removal of all foreign bodies

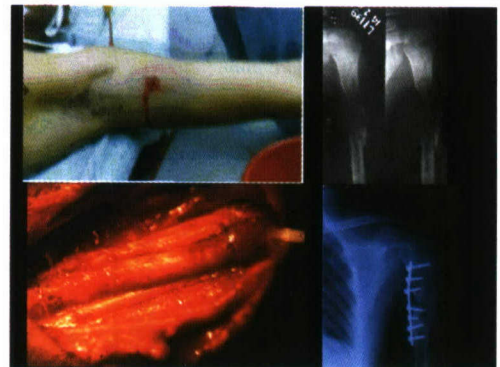
dissection is necessary to mobilize so field of dissection increases and there is serious risk of infection which may do irreparable damage to nerve.

Vascular injuries

Vessels may be damaged by penetrating injuries or by blunt injuries. Sharp missiles produce puncture wounds however, tangential injuries to the wall cause arterial laceration. Blunt trauma causes contusion of the wall. Intimal tear may occur due to cavitation effect of missile. Intimal flap some times results producing dissection of the artery. Spasm of artery is rare. Arteriovenous fistula forms when penetrating injuries occur in artery & adjacent vein. The signs of arterial injury are major haemorrhage, shock, large expanding haematoma, history of persistent bleeding, absent peripheral pulse, bruit over suspected injury site, pain, pallor paraesthesia paresis, decreased temperature locally, injury to anatomically related nerve & unexplained hypotension in a polytrauma patient. Repair of vessel injury should be undertaken where the facilities and expertise of repair are available.

Hand injuries

In hand injuries, in a forward center wristwatches, ring, or bangles are removed. naHand is cleaned with soap and water and fingernails are clipped,. Shreds of HHand is cleaned with soap and water and fingernails are clipped. Shreds of obviously dead tissue are excised. Tendons and nerves are not repaired. Amputation of digits is avoided in forward center. Fluffed gauze dressing is applied & hand is elevated. Do not pass pin to fix fracture but align the fractures by dressing or splinting keeping the Metacarpophalangeal joint in position of 90-degree flexion and interphalangeal joints in full extension. The patient is evacuated to a center where facilities of magnification, fine instruments and surgical expertise are available. In a center hand injuries should be dealt with as follows. First, fix fractures then revascularise then provide cover. If satisfactory cover is possible to arrange, repair of tendon and nerve can be done in the same sitting or can be done as a secondary procedure. Rehabilitation by physiotherapy and splintage is continued for obtaining satisfactory results.



GSW produces extensive damage of vessel wall and needs long bridge graft
Fractures must be fixed before vessel repair with 8"0"- 9"0" proline

Wounds of penis and scrotum

Wounds of penis, scrotum, testes and spermatic cord are managed by haemostasis and conservative debridement. In injuries of penis, Buck's fascia is repaired. If degloving is there, penis may be placed in scrotum. In testicular injuries conserve all tissues. Testes can be placed in thigh. Testicle should never be resected unless it is hopelessly damaged or blood supply is destroyed.

In neglected wounds, one must decide again, to go ahead with reconstruction or amputate. Problem in neglected wounds is extensive fibrosis in the tissues surrounding the defect extending along the tissue planes and along nerve & blood vessels. This is why recipient vessels should be selected far away in free tissue transfer in such cases.



Reconstruction should be done in center having all facilities and surgical expertise

Conclusion

In spite of so may advances, open fractures with extensive tissue loss still remains a challenging problem. Successful outcome depends upon a series of steps taken, at proper time and in a proper sequence. Awareness about

the possibility of salvage of severely injured extremities must be increased among the medical profession. Patients should be transferred to a center as soon as possible. In a study, it was found that if patient reaches late even by one week, the cost of treatment is 70-100% more and hospitalization was at least 3 weeks more. Severely injured extremities need teamwork for a successful outcome. Time elapsed between injury & debridement is very important & is directly proportional to infection. That is why casualties should be evacuated to a center as soon as possible.

The basis of success in military medicine in the combat zone is an organized team, each member of which has been trained to accept the responsibilities of his assigned position and to be prepared to move to a new station with different responsibilities as new situations develop. No matter how expert a medical officer may be in one field or another, he must always conduct himself within the purposes and limitations of the mission of the particular medical echelon in which he finds himself at that moment.

Modern wars are no longer limited conflicts between nations. Instead, they are fought between groups of nations. The role of medical profession therefore extends to the care of collaborating nationalities. It must be carried out in wide spread geographic areas and in extremes of climate. These facts highlighted by mounting tensions in which we live, explains the need for expansion of the curricula of medical education to include the doctrines and principles of military medicine.

DO'S AND DON'TS

<u>DO</u>	<u>DONT</u>
(i) Incise the skin generously	(i) Excise too much skin from wound margin
(ii) Incise the deep fascia widely	(ii) Practice keyhole surgery
(iii) Identify the neurovascular bundles	(iii) Stitch tendons or nerves
(iv) Excise all dead muscle	(iv) Remove bone
(v) Remove all in driven clothing	(v) Close the wound
(vi) Leave wound open	(vi) Pack the wound tightly but allow
(vii) Record the extent of the damage	(viii) free drainage, using lightly fluffed gauze

ARMED FORCES MEDICAL COLLEGE, PUNE

A centre of academic excellence

The Armed Forces Medical College, Pune is a premier medical institution of India. It is the first medical college set up by the Armed Forces of any country in Asia. This institution combines medical education with training specific to the health care needs of the Armed Forces. The college has four principal areas of training activity. These are:-

- Undergraduate training for award of MBBS degree.
- Post- graduate training for MD/ MS/ MDS degrees.
- Nursing training in the College of Nursing.
- Training of paramedical personnel in many disciplines.

The college is located in an environmental friendly campus near Ramtekri in eastern Pune. The city of Pune is often referred to as “Oxford of the East”, being home to many reputed educational institutions. AFMC occupies a special place amongst institutions in Pune, by virtue of its pre-eminence as a medical college of national fame. In a survey carried out by a reputed agency, AFMC has been rated as the second best college in India in 2005, after the All India Institute of Medical Sciences, New Delhi.

History of AFMC

The Armed Forces Medical College was established as a postgraduate institute on 01 May 1948 with the aim of imparting postgraduate training to doctors of the Indian Armed Forces Medical Services. Prior to this the college was known as the Army Medical Training Centre (AMTC) which was established on 17 Aug 1945 by the amalgamation of Army School of Hygiene, Junior Commissioned & Non-commissioned Officers Training School, Army School of Radiology, Central Military Pathology Laboratory and The Army Transfusion Centre. Today it is one of the finest among Indian postgraduate medical training and research centres imparting training in 21 specialties and 5 super-specialties.



AFMC – One of Pune’s most notable architectural landmarks

Graduate wing AFMC

The pride of AFMC is the fully residential Graduate Wing established on 04 Aug 1962 to realize the vision of a full-fledged medical college replete with both under- graduate and postgraduate teaching facilities. The annual intake is through a highly competitive national level entrance examination followed by an elaborate counseling, which ensures quality input. The presence of a competent faculty that is second to none and the availability of the best training facilities including adequate clinical exposure through rotations at Military Command Hospital co-located with the college, a nearby Cardio-thoracic Centre, a Artificial Limb Centre and an orthopaedic centre at

Kirkee. The last decade has seen the college scaling the heights of excellence in medical education.

The students have ample opportunity for all-round development, as an individual with the vast vistas available for honing their co-curricular skills be it in scientific society or the various clubs for dramatics, hobbies, adventure and debating. The campus has adequate facilities for various sports activities also. These clubs represent the college at various inter- collegiate competitions and cultural events at the local as well as national level. AFMC honours it's finest by conferring upon them the college colours and blues.



Students in training



Passing out parade at AFMC

AFMC has produced almost 5000 doctors since 1966, when the first batch passed out. The 39 batches, which have stepped out of the portals of this institution, have rendered yeoman service to the Nation. A large number of AFMC graduates are also making their mark abroad. Twice a year, an impressive commissioning ceremony is held in the college.

Post graduate training

AFMC has a total of 29 departments in different disciplines of medical science. The institution is responsible for providing specialists and super specialists to Armed Forces by giving them in-service training. At present the college is running 21 post-graduation training programmes. In addition it trains super-specialists in 5 disciplines and runs 11 diploma courses. It is also recognized as a center for PhD. At any given time almost 263 post graduate trainees are engaged in research and academic activities of the highest standard under the enlightening stewardship of 145 highly qualified and accomplished members of the faculty. The establishment of the first Haematopoietic Stem Cell Bank in India to treat patients with life threatening leukaemia, bone marrow failure and malignant conditions using stem cell transplantation is the latest achievement. A well functioning Joint Replacement Centre, an active Cochlear Implant Surgery Programme and the availability of an Eye Bank & Corneal Implant Centre makes this institution unique. A visit to the Museum of Preventive and Social Medicine (considered one of the finest museums in South East Asia) is indeed informative. AFMC is in the process of establishing the first DNA databank and repository in the country.

College of nursing, AFMC

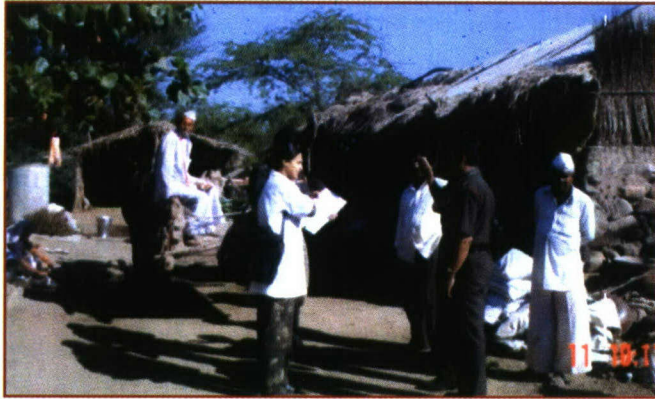
The College of Nursing was established in 1964 and is co-located with the college. With an annual intake of 30 students who are selected through an all India competitive examination, it has produced 873 nursing officers for the Military Nursing Services. The College of Nursing is an accepted center of excellence of nursing training in India.

Humanitarian & social activities

AFMC has been at the forefront of humanitarian



Flood relief at Sangli by AFMC



Health care by AFMC students

activities. This was witnessed in the relief work that was provided by the college teams to the tsunami victims, earthquake afflicted in Kashmir and to the flood victims in Maharashtra. AFMC has reached out to the community on several occasions through Health awareness campaigns. These have been well received by the people. The college has participated actively in enhancing AIDS awareness through rallies, exhibitions and plays.

Visit of His Excellency The President of India

The Supreme Commander honoured AFMC in 2005. The President of India, Dr APJ Abdul Kalam visited the college and inaugurated an Annual Forces Medical Research Committee Conference on 01 Feb 2005. Addressing the college he said *"When I see medical cadets, I see them as future pain removers. When I see the nursing cadets, I am reminded of angels moving in a full moon night"*. He shared his vision for the country's future. Speaking of his most treasured moment he said, *"In class V our teacher taught us how a bird flew. He taught us so beautifully that it inspired me to fly high in my life!"*

The Armed Forces Medical College, Pune has evolved through progress and innovation into a nationally recognized institution. In the inexorable march of time at AFMC, has kept pace with the present, and yet not lost touch with the past through the dedication and diligence of team AFMC. These unique qualities have seen college retaining its position among the top three medical colleges of the country.



President of India, Dr APJ Abdul Kalam at AFMC

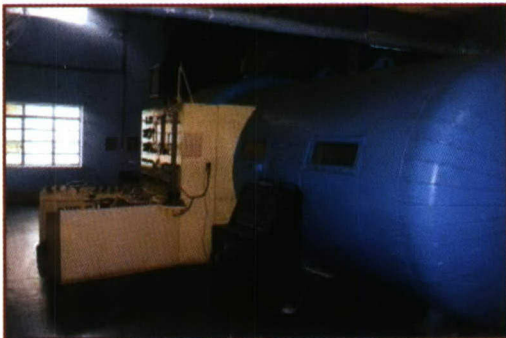
of the country.

AFMC – where generations co – exist, where evolution is through innovation in medical science and teaching technology, where we strive not just to make good doctors but good human beings, where the eternal quest for perfection continues as every new day brings with it a new year. At AFMC we strive ceaselessly because we care.

INSTITUTE OF AEROSPACE MEDICINE

The Institute of Aerospace Medicine (IAM) Bangalore was established as a centre for aero-medical activities related to Indian military and civil aviation in the late 50's. The changing needs of modern aerospace applications have fueled a tremendous increase in the aero-medical activities of IAM. Some of the key areas of expertise are:

- (a) Training
- (b) Aeromedical Evaluation
- (c) Aeromedical Research
- (d) Human Engineering Consultancy
- (e) Aeromedical support to Civil Aviation
- (f) Aeromedical support to Manned Space Programme



IAM, IAF is recognized by the Medical Council of India for training in Aviation Medicine. It is an affiliated Post Graduate college of the Rajiv Gandhi University of Health Sciences, Bangalore, for the conduct of MD in Aviation Medicine. It also conducts short courses for civilian and military doctors in Aviation Medicine. The Institute also offers the training courses to foreign nationals (Sri Lanka, Bangladesh, Myanmar, African Countries, etc) especially, their medical officers.

IAM also imparts training to military aircrew. Paramedical personnel are also trained in flight nursing and casualty evacuation. The Institute is equipped with altitude and climatic chambers, human centrifuge and dry water immersion facility to demonstrate in-flight aeromedical stresses to aircrew.

Aeromedical evaluation of Armed Forces and Civil Aircrew personnel is one of the important functions of IAM. Aircrew are put through a series of thorough tests in the Institute prior to their commissioning in the Air Force. In addition certain specific disabilities, such as loss of consciousness in the air, head injuries, orthopaedic disabilities, ejection injuries, air sickness, cardiovascular disabilities etc are evaluated at the Institute. The Institute also carries out initial and renewal medical evaluation of civil aircrew. Aeromedical simulators are used for realistic evaluation under simulated condition of flight.



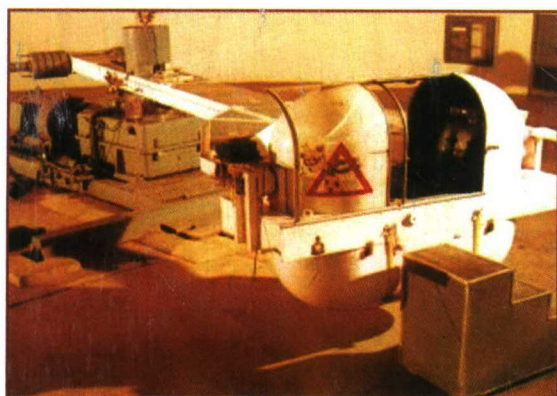


The Institute has a hypobaric chamber which can simulate altitudes up to 1,00,000 ft. It is used for aeromedical indoctrination of aircrew, medical officers and para medical personnel. It also used for research and medical evaluation of aircrew and various equipment.

The Institute established the Hyperbaric medicine centre in 1967. It has a specially made chamber where the patients can be exposed to high pressures of oxygen in order to revive devitalized parts of tissues. A number of lives and limbs have been saved

where other methods of treatment have failed. Cases of gangrene, tetanus, necrotic ulcers, crush injuries etc, have been treated with great success. This facility is also extended to the civilian patients.

Aerospace Medicine aims at optimising and enhancing aircrew performance vis-a-vis the artificial environment imposed by flying. Acceleration stress in the flying milieu is one such stress, which affects and sometimes limits the performance of the fighter pilot. It assumed importance, when its effects on the physiological systems exceeded the human tolerance and caused aircrew to lose consciousness while in a critical phase of flight. Fighter Pilot's incapacitation due to G-induced loss of consciousness (G-LOC) poses a great flight safety hazard and is a premier human factor challenge facing all the modern Air Forces today. Loss of consciousness caused by the acceleration that occurs during aircraft manoeuvres, is basically a physiologic problem and the +Gz (and its cause) cannot be removed since it is inherent in flying high performance aircraft. Human Centrifuge is used to simulate radial acceleration as the gondola traverses a circular path about the long arm. Human centrifuge is used for acceleration research and training on ground under safe and controlled conditions. The Human Centrifuge at IAM was installed in 1966. It will shortly be replaced by a modern centrifuge.



Spatial Disorientation (SO) is one of the important causes of aircraft accidents. The Spatial Disorientation Simulator at IAM demonstrates the effects of Spatial Disorientation and is used to teach the pilots the techniques to maintain situational awareness.

All indigenously developed life support system and protective garments for aircrew are tested at the IAM. The Institute is also involved in laying down the specifications and the design criteria for such equipment and works closely with various organisations under the Defence Research Development Orga-

nization (DRDO) responsible for developing and fabricating such equipment.

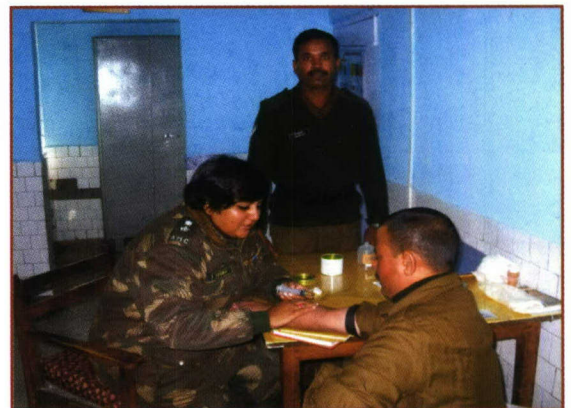


HIGH ALTITUDE MEDICAL RESEARCH CENTRE

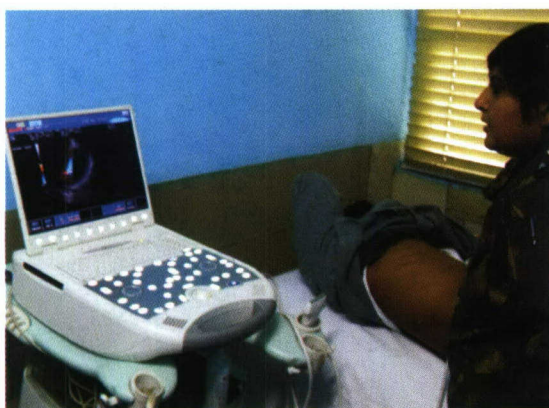
The Indian Army has the unique distinction of operating in the World's highest and coldest battlefield, being deployed at heights ranging from 4000 m to above 6000 m in the Siachen Glacier and the Leh-Ladakh regions of the Himalayas. With limited knowledge of the effects of the environment on the human body at such heights and also in order to minimize High Altitude and cold related medical problems amongst troops, the High Altitude Medical Research Centre (HAMRC) was established at Leh in 1988. This is a joint venture between the Defence Research Development Organization and the Director General Armed Forces Medical Services of India.



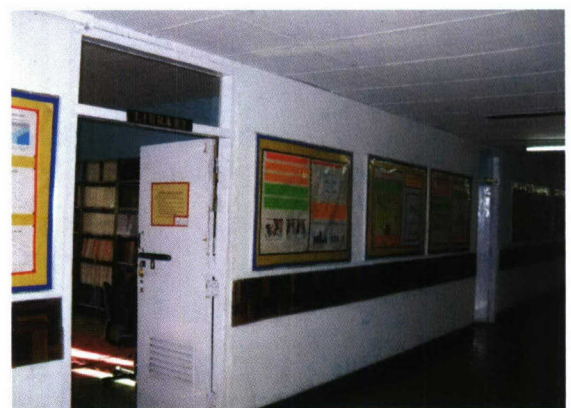
Exercise lab



Biochemistry



Echocardiography



Library

The High Altitude Medical Research Centre is co-located along with the military hospital at Leh and has a committed military staff manning it. It has indeed lived up to its mission. While the centre has been carrying out the health indoctrination of the deployed troops it has also been providing consultancy to the troops regarding acclimatization schedules, nutritional requirements and physical fitness. The centre has been able to develop strategies, after meticulous applied and clinical research, to optimize performance at HA and cold induced scenarios. From its

modest beginning it has grown in stature to a nodal laboratory capable of guiding HA research by other agencies as well as provide training to medical professionals on high altitude medicine.

Current research: The pioneering efforts by the centre on evaluating acclimatization in various ethnic groups, the benefits of yoga in high altitude and the patho-physiology of high Altitude Pulmonary Oedema (HAPO) are some of the path breaking research activities conducted by the centre. Considerable progress has also been achieved in the evaluation of erythropoietin, oxygen dissociation curve & P 50 studies at HA and use of echocardiography & cardiac output studies at HA. The centre does not limit itself to pure research but also to its application. The introduction of the HAPO bag after extensive trials at the centre at high altitude has resulted in considerable user level satisfaction.

Research activities being conducted



KAP in HA: Questionnaire being administered



Field testing HAPO Bag



Yoga Display Kumbathang



Field study: acclimatization Leh Manali axis

Collaborative Projects

HAMRC serves as a nodal Laboratory lending its facilities and logistic support to various other institutes and agencies to conduct research. The institute is presently collaborating on various studies including role of oral Glutamic acid supplementation in ameliorating HA stress, acclimatization and performance of Armed Forces Personnel at HA as well as a pilot study on molecular mechanism of HA Acclimatization by differential gene expression analysis. The centre has also been successfully working on assessment of nutritional requirements of Armed Forces Personnel in various conditions of HA, application of nitric oxide in treatment of HAPO and also studies on brain functions at HA with special reference to sleep architecture.

Other agencies conducting research at HAMRC



Future directions

The centre is striving for recognition as a full-fledged state of art institute with augmented funds and manpower. In the future the centre visualizes working on determining a simple non-invasive indicator/ marker for HA susceptibility. Considering the requirement for proper acclimatization of troops before induction to high altitude, it will be a great boon if a test be designed to indicate good acclimatization in an individual. While we endeavour to understand the mechanism of hypoxic influence on our micro and macro systems i.e. at physiologic, biochemical, genomic and proteomic levels, a simultaneous study of HA natives and their adaptive mechanisms would also be beneficial and is being planned by the centre.

Conclusion

Sometimes fatal, and often permanently disabling, high altitude illnesses form a significant section of morbidity in the Indian Armed Forces. Hence The High-Altitude Medical Research Centre fulfils a long felt need, and the research conducted in the investigation of the patho-physiological effects of high altitude and extreme cold, has helped to significantly reduce the mortality and morbidity in the troops deployed in High Altitude.

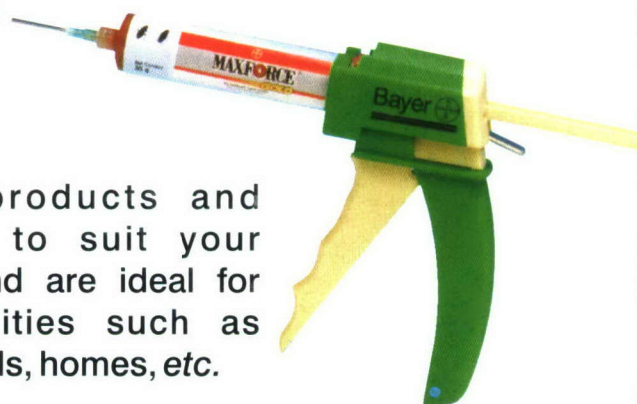


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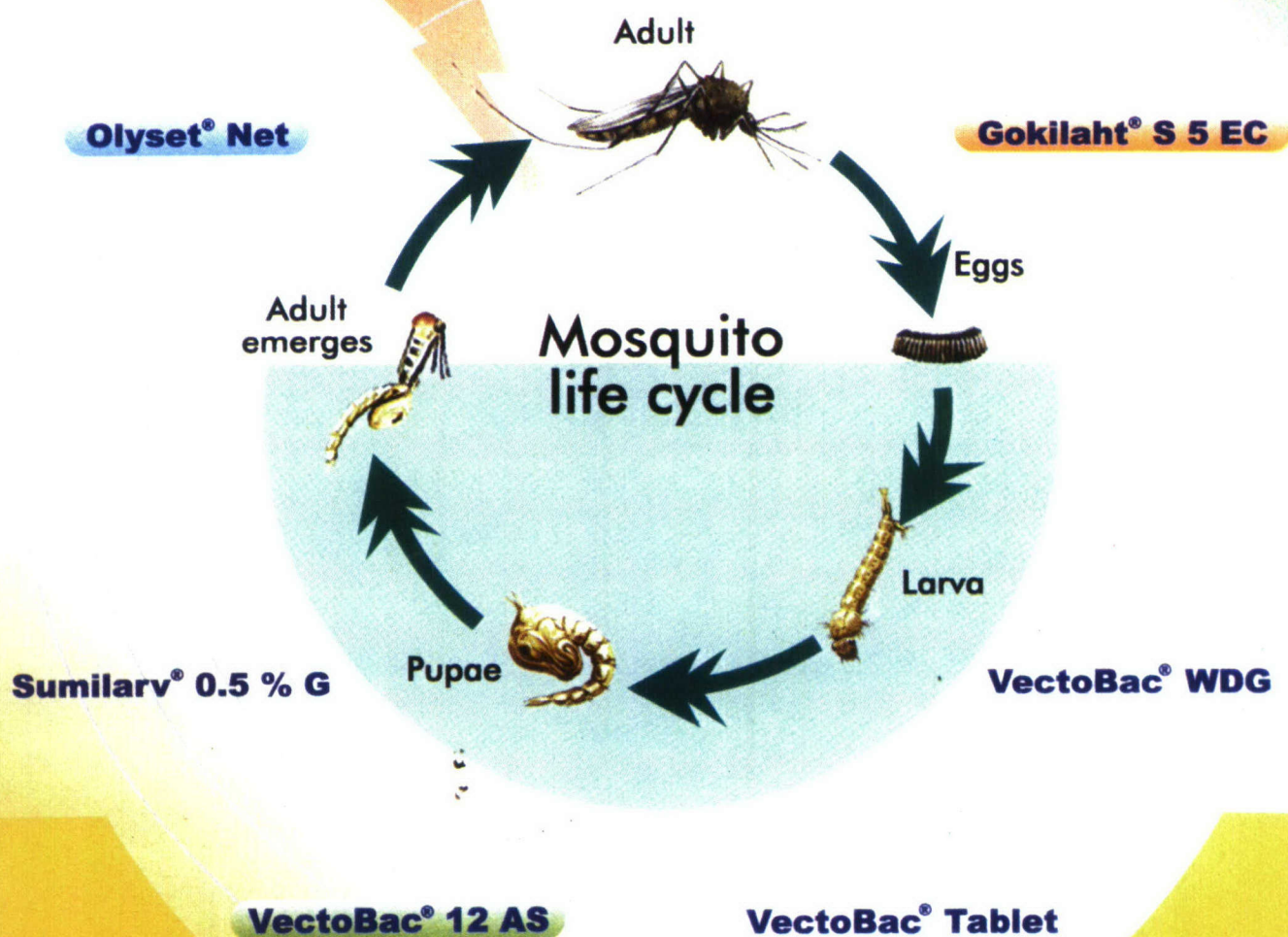


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